



YAMAHA

RX50K

Service Manual

NOTICE

This manual was written by the Yamaha Motor Company primarily for use by Yamaha dealers and their qualified mechanics. It is not possible to put an entire mechanic's education into one manual, so it is assumed that persons using this book to perform maintenance and repairs on Yamaha motorcycles have a basic understanding of the mechanical concepts and procedures inherent to motorcycle repair technology. Without such knowledge, attempted repairs or service to this model may render it unfit to use and/or unsafe.

Yamaha Motor Company, Ltd. is continually striving to improve all models manufactured by Yamaha. Modifications and significant changes in specifications or procedures will be forwarded to all Authorized Yamaha dealers and will, where applicable, appear in future editions of this manual.

Particularly important information is distinguished in this manual by the following notations:

NOTE: A NOTE provides key information to make procedures easier or clearer.

CAUTION: A CAUTION indicates special procedures that must be followed to avoid damage to the motorcycle.

WARNING: A WARNING indicates special procedures that must be followed to avoid injury to a motorcycle operator or person inspecting or repairing the motorcycle.

SERVICE DEPT.
INTERNATIONAL DIVISION
YAMAHA MOTOR CO., LTD.

RX50K

SERVICE MANUAL

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CHAPTER 1. GENERAL INFORMATION

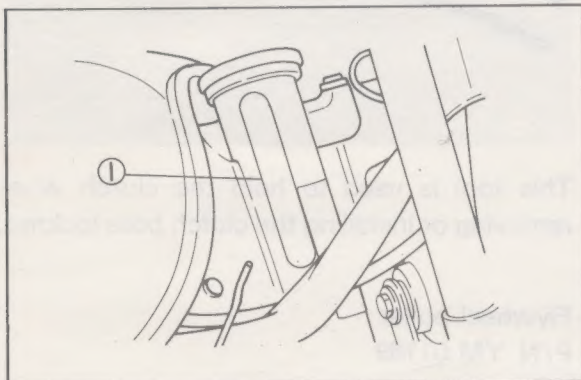
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CHAPTER 1. GENERAL INFORMATION

MOTORCYCLE IDENTIFICATION

A. Vehicle Identification Number

The vehicle identification number is stamped into the steering head pipe.



1. Vehicle identification number

B. Engine Serial Number

The engine serial number is stamped into the elevated part of the right rear section of the engine.

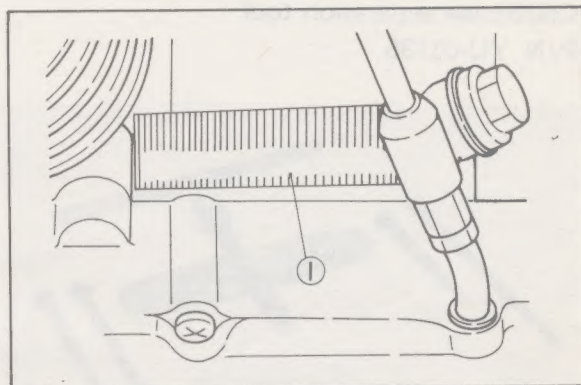
Starting serial number:

RX50K

23H-000101

NOTE:

The first three digits of these numbers are for model identification; the remaining digits are the unit production number.



1. Engine serial number



SPECIAL TOOLS

The proper special tools are necessary for complete and accurate tune-up and assembly. Using the correct special tool will help prevent damage caused by the use of improper tools or improvised techniques.

A. For Tune-up

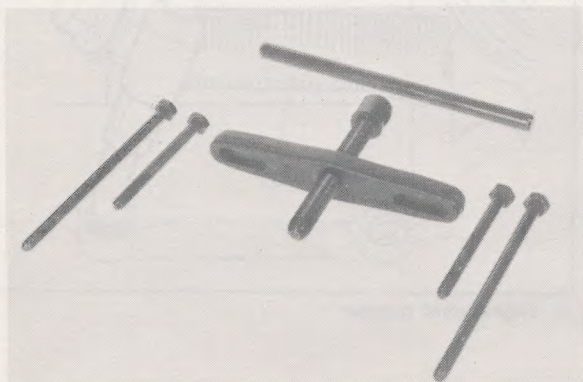
Inductive tachometer (P/N YU-08036)

Inductive timing light(P/N YU-08037)

B. For engine service

Crankcase separation tool

P/N YU-01135



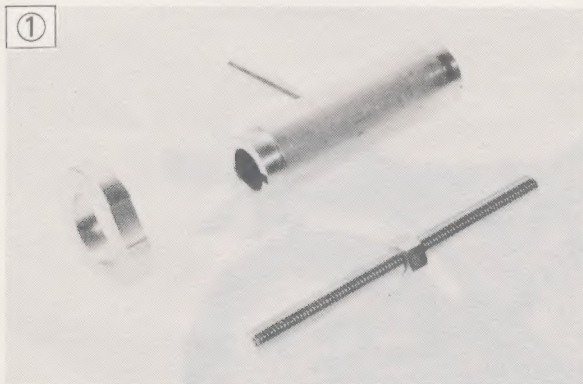
This tool is used to split the crankcase as well as remove the crankshaft from either case.

Crankshaft installation set and adapter set.

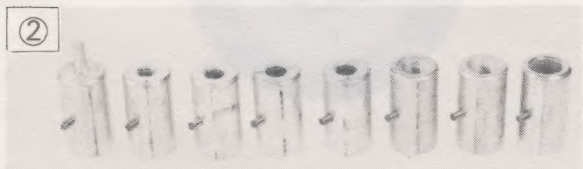
P/N YU-90050 (①)

P/N YM-90051 (②)

①

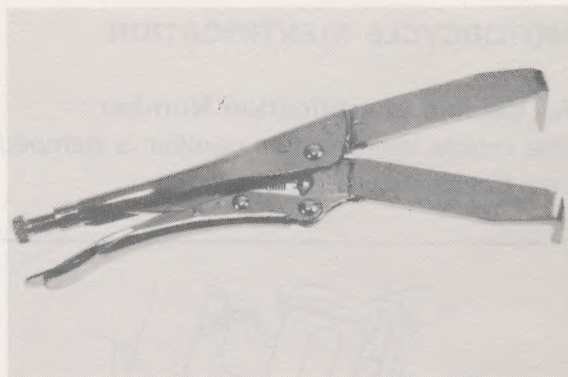


②



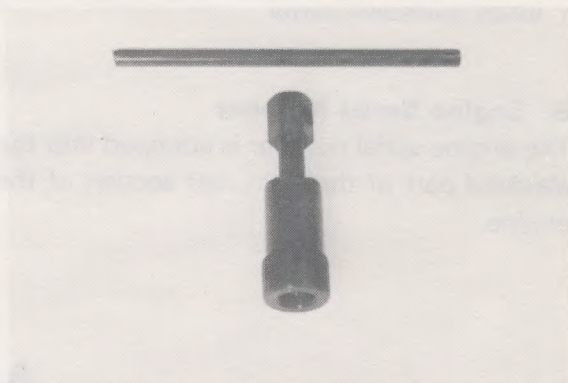
These tools are used to install the crankshaft.

Universal clutch holder
(P/N YM-91042)



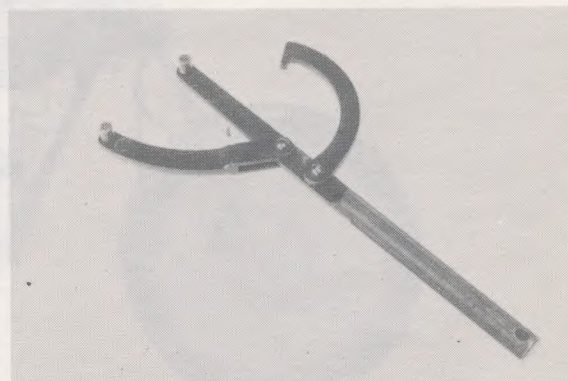
This tool is used to hold the clutch when removing or installing the clutch boss locknut.

Flywheel puller
P/N YM-01189



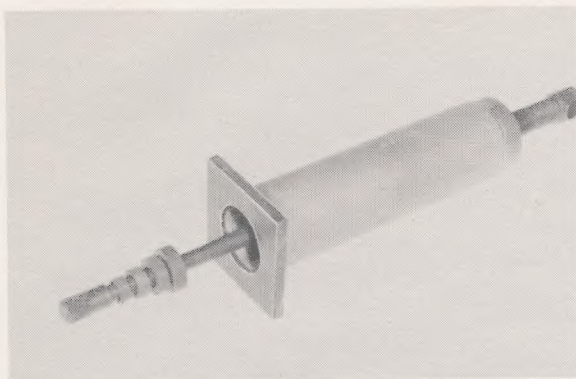
This tool is used to remove the flywheel magneto.

Universal magneto & Rotor holder
P/N YU-01235



Use this tool to hold the flywheel magneto while removing or tightening the flywheel magneto securing nut.

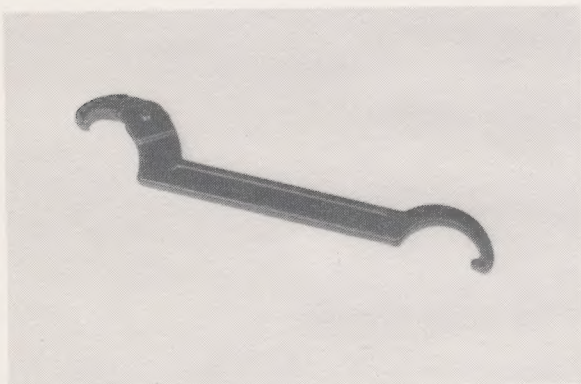
Piston pin puller
P/N YU-01304



This tool is used to remove the piston pin.

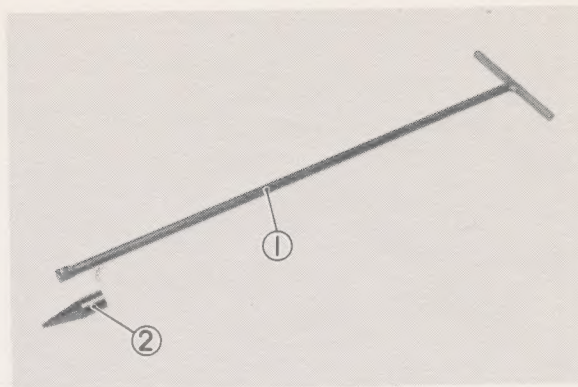
C. For Chassis Service

Ring nut wrench
YU-01268



- Use this wrench to put the proper tension on the steering head bearing.
- Use this wrench to removing or tightening the exhaust pipe ring nut.

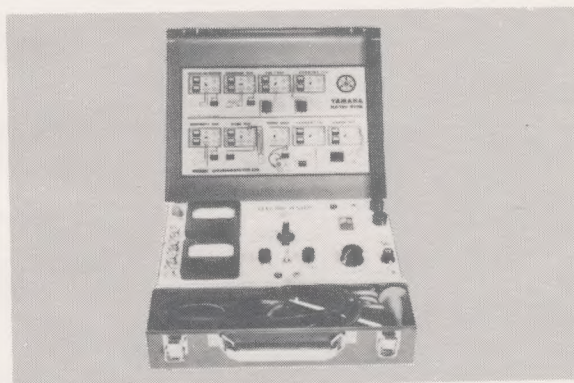
T-handle & Damper rod
P/N YM-01326 (①)
P/N YM-01300-1 (②)



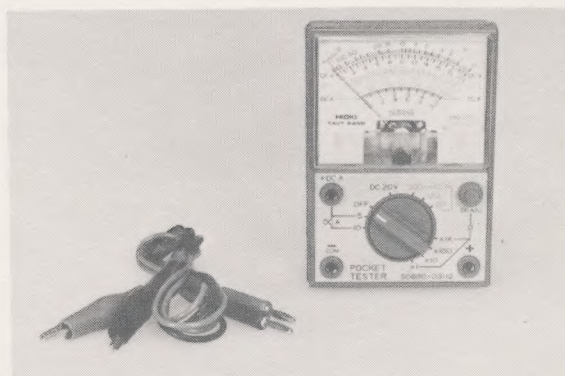
D. For Electrical Components

The uses of these tools are described in Chapter 6.

Electro tester
(P/N YU-03021)



Pocket tester
(P/N YU-03112)



CHAPTER 2. PERIODIC INSPECTIONS AND ADJUSTMENTS

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CHAPTER 2. PERIODIC INSPECTIONS AND ADJUSTMENTS

INTRODUCTION

This chapter includes all information necessary to perform recommended inspections and adjustments. These preventive maintenance procedures, if followed, will ensure more reliable vehicle operation and a longer service life. The need for costly overhaul work will be greatly reduced. This information applies to vehicles already in service and to new vehicles that are being prepared for sale. All service technicians should be familiar with this entire chapter.

MAINTENANCE INTERVALS CHARTS

The following charts should be considered strictly as a guide to general maintenance and lubrication intervals. You must take into consideration that weather, terrain, geographical location, and a variety of individual uses. This time schedule should be altered to match individual owner's requirements. For example, if the machine is continually operated in an area of high humidity, then all parts must be lubricated much more frequently than shown on the chart to avoid damage caused by water to metal parts.

GENERAL MAINTENANCE/LUBRICATION

No.	ITEM	REMARKS	TYPE	INITIAL BREAK-IN		THEREAFTER EVERY	
				1,000 km or 1 month (600 mi)	4,000 km or 7 months (2,500 mi)	3,000 km or 6 months (2,000 mi)	15,000 km or 24 months (9,500 mi)
1	Transmission oil	Warm up engine before draining.	Yamalube 4-cycle oil or SAE 10W30 type SE motor oil	Replace	Replace	Replace	
2*	Autolube pump	Check and adjust pump cable and minimum pump stroke.	—	○	○	○	
3*	Air filter	Check for clogging. If necessary clean and dampen with oil.	Foam-air-filter oil or equivalent	○	○	○	
4	Control and meter cables	Inspect and lubricate thoroughly.	Yamaha chain and cable lube or SAE 10W30 motor oil	○	○	○	
5*	Clutch	Adjust free play	—	○	○	○	
6*	Brake system	Adjust free play. Replace pads if necessary (front). Replace shoes if necessary (rear).	—	○	○	○	
7*	Throttle	Adjust as necessary. Lightly lubricate.	Lithium base grease		○	○	
8	Brake/Clutch pivot shaft	Apply chain lube lightly.	Yamaha chain and cable lube or SAE 10W30 motor oil.		○	○	

No.	ITEM	REMARKS	TYPE	INITIAL BREAK-IN		THEREAFTER EVERY	
				1,000 km or 1 month (600 mi)	4,000 km or 7 months (2,500 mi)	3,000 km or 6 months (2,000 mi)	15,000 km or 24 months (9,500 mi)
9*	Drive Chain	Check chain condition. Adjust chain tension. Lubricate chain thoroughly.	Yamaha chain and cable lube or SAE 10W30 motor oil.	Every 500 km (300 mi)			
10	Sidestand pivot shaft	Apply chain lube lightly.	Yamaha chain and cable lube or SAE 10W30 motor oil		○	○	
11*	Front fork oil	Drain completely. Fill to specification.	Yamaha fork oil 10wt or equivalent				Replace
12*	Steering bearings	Check steering assembly for looseness. Moderately repack every 15,000 km (9,500 mi).	Medium weight wheel bearing grease		○		Repack
13*	Wheel bearings	Check bearings for smooth rotation. Moderately repack every 15,000 km (9,500 mi).	Medium weight wheel bearing grease		○		Repack
14*	Battery	Check specific gravity and breather pipe for proper function.	—		○	○	
15	Spark plug	Check spark plug condition and plug gap. Replace plug every 3,000 km (2,000 mi).			Replace	Replace	
16*	Fuel cock	Check fuel filter screen. Clean it, if necessary.		○	○	○	
17*	Exhaust System	Check for leakage, retighten if necessary. Replace gasket(s) if necessary.			○	○	
18*	Idle Speed	Check and adjust engine idle speed.			○	○	

*It is recommended that these items be serviced by a Yamaha dealer or other qualified mechanic.

ENGINE

A. Spark Plug

1. Check electrode condition and wear, insulator color, and electrode gap.
2. Clean the spark plug with spark plug cleaner if necessary. Use a wire gauge to adjust the plug gap to the specification.
3. If the electrode becomes too worn, replace the spark plug.
4. When installing the plug, always clean the gasket surface, wipe off any grime that might be present on the surface of the spark plug, and torque the spark plug properly.

Standard Spark Plug: NGK B8HS
Spark Plug Gap:
0.5 ~ 0.6 mm (0.020 ~ 0.024 in)
Spark Plug Tightening Torque:
20 Nm (2.0 m·kg, 14 ft·lb)

B. Fuel Line

Check the fuel hoses for cracks or damage; replace if necessary.

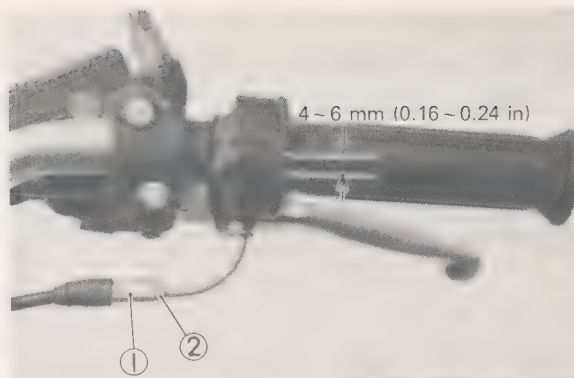
C. Exhaust System

1. Tighten the exhaust pipe ring nut and muffler mounting nut.
2. Replace the exhaust pipe gasket if necessary.

D. Carburetor

1. Throttle cable

Check play in turning direction of throttle grip. The play should be 4 ~ 6 mm (0.16 ~ 0.24 in) at grip flange. Loosen the lock nut and turn the wire adjuster to make the necessary adjustment. After adjusting, be sure to tighten the locknut properly.



1. Adjuster 2. Locknut

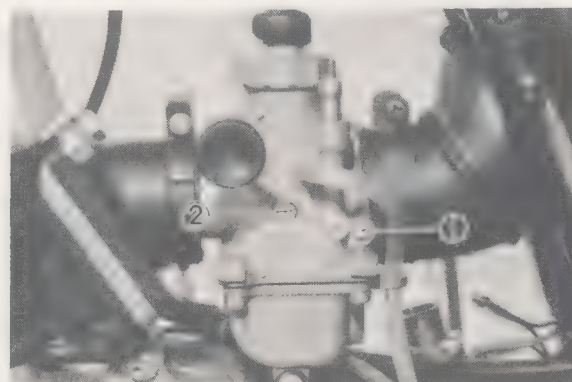
2. Idling speed

- a. Turn the air adjusting screw until it lightly seats, then back it out to specification. This adjustment can be made with engine stopped.

Air screw (Turns out): left and right

1 and 3/4

- b. Start the engine and let it warm up.
- c. Turn the throttle stop screw in or out to achieve smooth engine operation at specified idle speed.



1. Pilot air screw

2. Throttle stop screw

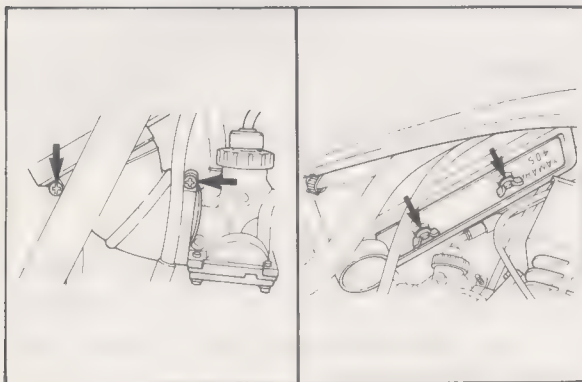
Idling speed: 1,300 ± 50 r/min

NOTE:

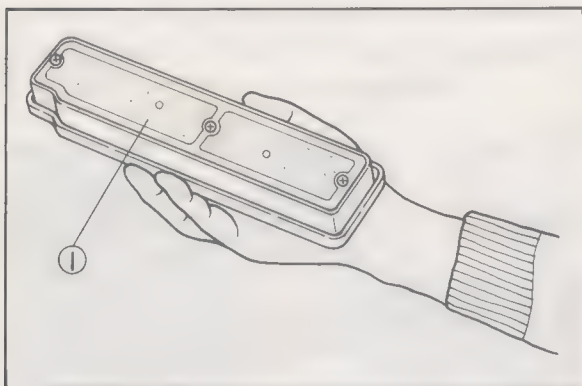
The pilot air and throttle stop screws are separate adjustments but they must be adjusted at the same time to achieve optimum operating condition at engine idle speeds.

E. Air Filter

1. Remove the side cover (R) and air cleaner joint.
2. Remove the wing bolts holding the filter element case.



3. Remove the air filter element from its case and clean with solvent. After cleaning, remove the remaining solvent by squeezing the air filter element.



1. Air filter element

CAUTION:

Before taking out the element, remember the direction in which it was installed. Use this direction in reinstalling the cleaned element; otherwise, it will cause the carburetor to clog.

4. Then apply form-air-filter oil or equivalent to the entire surface and squeeze out the excess oil. Element should be wet but not dripping.

5. When installing the air filter element in its case, be sure its sealing surface matches perfectly the sealing surface of the case so there is not air leakage.
6. The air filter element should be cleaned at the specified intervals. It should be cleaned more often if the motorcycle is operated in dusty or wet areas.

CAUTION:

The engine should never be run without the air cleaner element installed; excessive piston and/or cylinder wear may result.

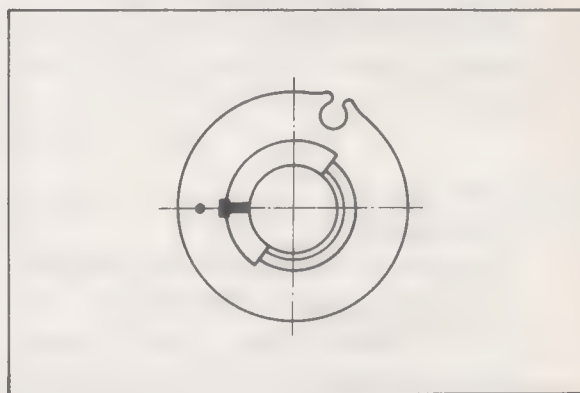
F. Autolube Pump

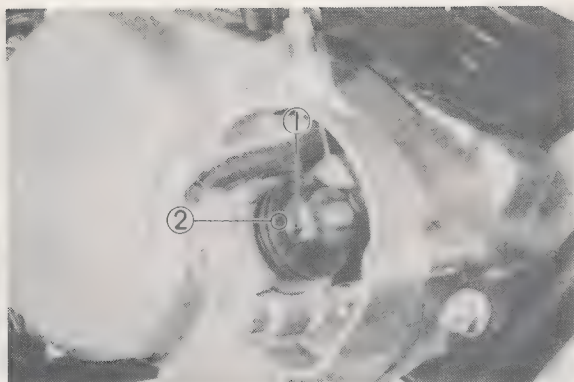
1. Cable adjustment

NOTE:

Before adjusting Autolube pump cable always, adjust throttle cable free play first.

- a. Remove the Autolube pump cover.
- b. Rotate the throttle grip slightly until all slack is removed from all cables. Hold this position.
- c. Check to see that Autolube pump plunger pin is aligned with the mark (●) on the Autolube pump pulley.





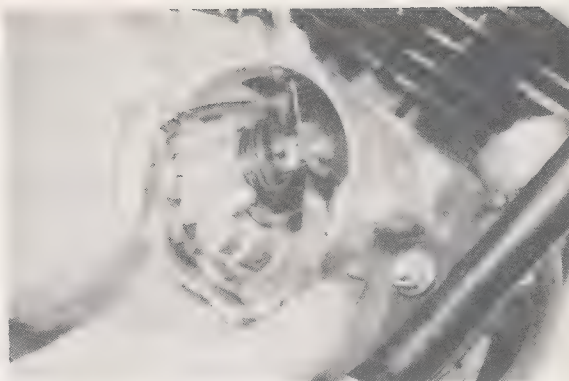
1. Plunger pin 2. Match mark

- d. If the mark and pin are not in alignment, loosen the cable length adjuster locknut and adjust cable length until alignment is achieved.



1. Cable adjuster 2. Locknut

- e. Apply lightly grease to the pump pulley.
- f. Tighten the adjuster locknut.
2. Minimum pump stroke check and adjustment procedure
 - a. While running the engine at idle, observe the pump adjust plate carefully. Stop the engine the moment that the adjust plate moves out to its limit.
 - b. Measure the gap with the thickness gauge between the raised boss on the pump adjust pulley and the adjust plate.



- c. Repeat steps "a" and "b" above a few times. When the gap measured is the largest, the pump stroke is considered to be at a minimum.

NOTE:

When inserting the thickness gauge between the adjust plate and the adjust pulley, be careful so that neither the plate nor the pulley is moved. In other words, do not force the thickness gauge into the gap.

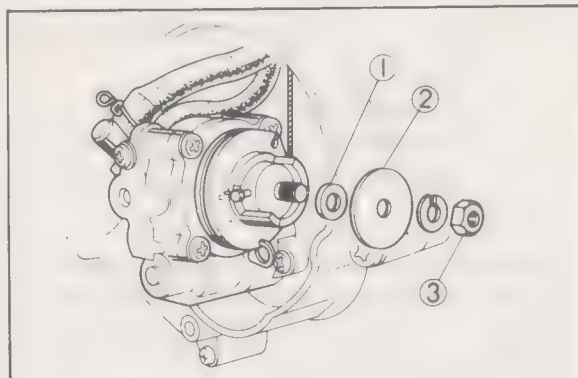
Minimum pump stroke:

0.20 ~ 0.25 mm (0.008 ~ 0.010 in)

Maximum pump stroke:

1.85 ~ 2.05 mm (0.073 ~ 0.081 in)

- d. If clearance is not correct, remove the adjust plate locknut and the adjust plate.
- e. Remove or add an adjust shim as required. Tighten the locknut and remeasure the gap.



1. Adjust shim 2. Adjust plate 3. Locknut

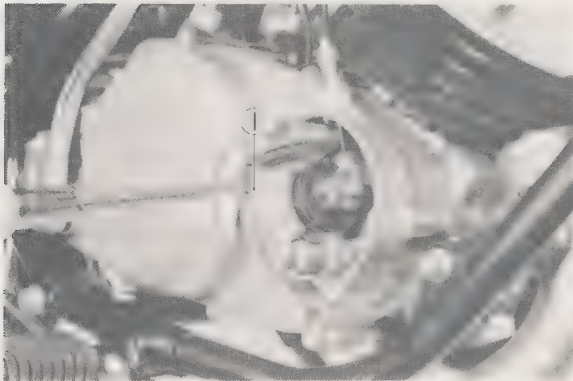
3. Bleeding the pump

The Autolube pump and delivery lines must be bled on the following occasions:

- Whenever the Autolube tank has run dry.
- Whenever any portion of the Autolube system is disconnected.

a. Bleeding the pump case and/or oil pipe

- 1) Remove the pump cover and remove the bleed screw.



1. Bleed screw

- 2) Keep the oil running out until air bubbles disappear.
- 3) When air bubbles are expelled completely, tighten the bleed screw and install the pump cover.

NOTE: _____

Check the bleed screw gasket, and if damaged, replace with a new one.

b. Bleeding the pump distributor and/or delivery pipe

- 1) Start the engine.
- 2) Pull the pump wire all the way out to set the pump stroke to a maximum.

NOTE: _____

It is difficult to bleed the distributor completely with the pump stroke at a minimum, and therefore the pump stroke should be set to a maximum.

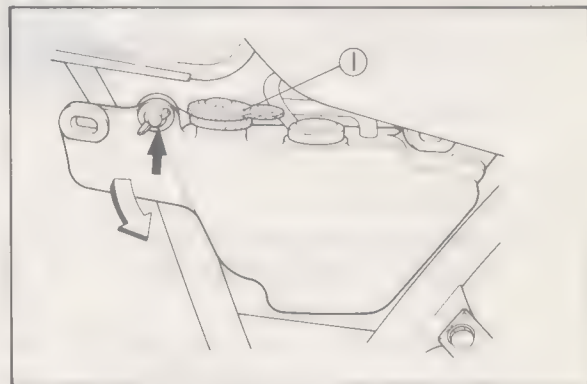


- 3) Keep the engine running at about 2,000 r/min for two minutes or so, and both distributor and delivery pipe can be completely bled.

G. Engine and Transmission Oil

1. Engine oil

- a. Remove the side cover (L).
- b. Loosen the tank fitting nut and remove the cap.
- c. Top up oil tank.
- d. Reinstall the tank cap and nut securely.



1. Oil tank filler cap

Recommended oil:

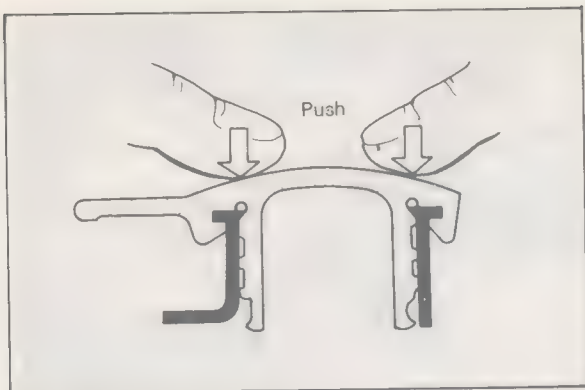
Yamaha 2-cycle oil or
Air cooled 2-stroke engine oil

Oil tank capacity:

1.1 L (1.0 Imp qt, 1.2 US qt)

NOTE: _____

Install the oil tank filler cap and push it fully into the filter.



2. Transmission oil

- a. To check level, start the engine and let it run for several minutes to warm and distribute oil. With the engine stopped, unscrew the oil plug. Set the oil level gauge on the case threads in a level position. Remove the oil level gauge and check the level.

NOTE:

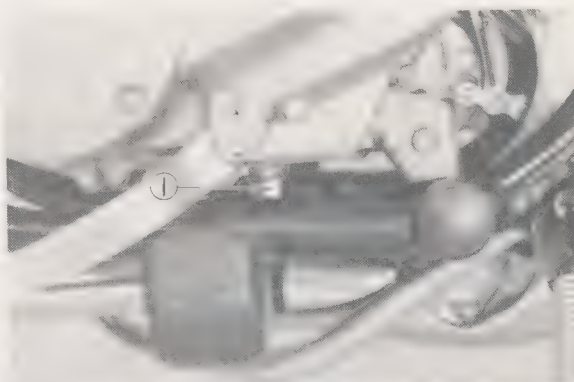
Be sure the motorcycle is level and on both wheels.

- b. The oil level gauge has Minimum and Maximum marks. The oil level should be between the two marks. Add oil as required.

Recommended oil:

Yamalube 4-cycle oil or
SAE 10W30 type SE motor oil

- c. A drain plug is located on the bottom of the crankcase. With the engine warm, remove the plug and drain oil. Re-install the plug and add fresh oil.



1. Drain plug

Transmission drain plug torque:

20 Nm (2.0 m·kg, 14 ft·lb)

Transmission oil capacity:

Total: 0.625 ~ 0.675 L

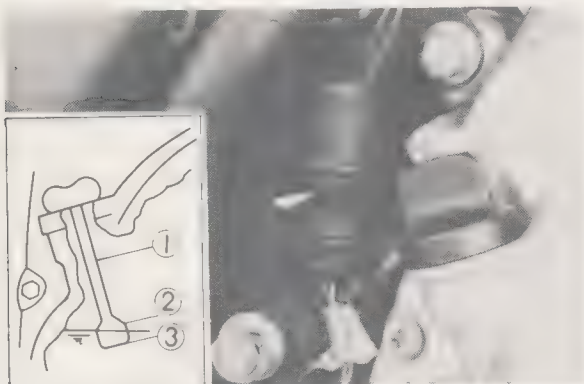
(0.55 ~ 0.59 Imp qt,

0.66 ~ 0.71 US qt)

Periodic oil change: 0.575 ~ 0.625 L

(0.51 ~ 0.55 Imp qt,

0.61 ~ 0.66 US qt)



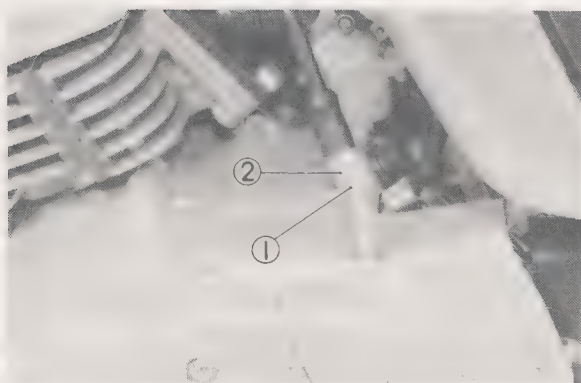
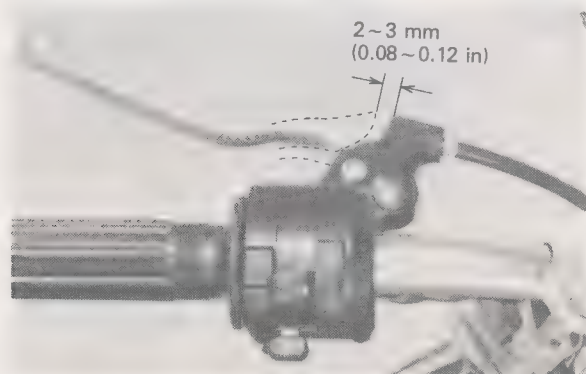
1. Oil level gauge 2. Maximum level 3. Minimum level

H. Clutch Adjustment

1. Free play adjustment

The clutch should be adjusted to suit the rider's preference within 2 ~ 3 mm (0.08 ~ 0.12 in) free play at the lever pivot side.

- a. Turn the cable length adjuster either in or out until proper lever free play is achieved.



1. Locknut 2. Adjuster

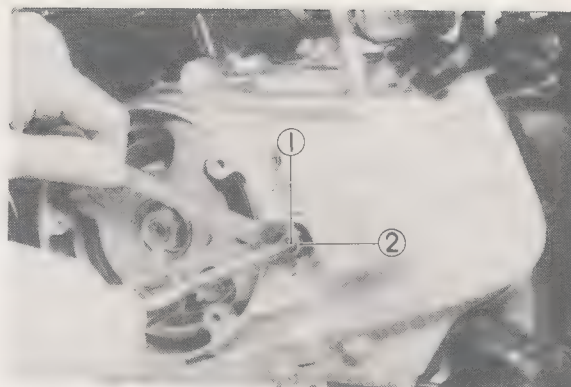
- b. Tighten the locknut.

NOTE: _____

The above procedure provides for maximum cable free play to allow for proper clutch actuating mechanism adjustment.

2. Mechanism adjustment

- a. Fully loosen the cable in-line length adjuster locknut and screw in the adjuster until tight.
- b. Remove the flywheel cover and loosen adjuster locknut.



1. Adjuster 2. Locknut

- c. Slowly tighten the adjusting screw until resistance is felt. This means that the play of the push rod is removed. Then, back it 1/4 turn. Tighten the locknut.

TIGHTENING TORQUE:

8 Nm (0.8 m·kg, 5.8 ft·lb)

- d. Adjust the lever free play.

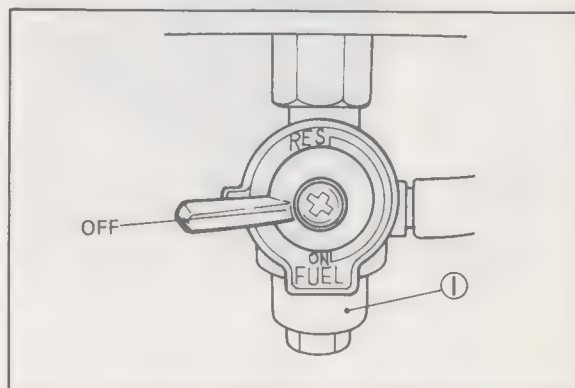
CHASSIS

A. Fuel cock

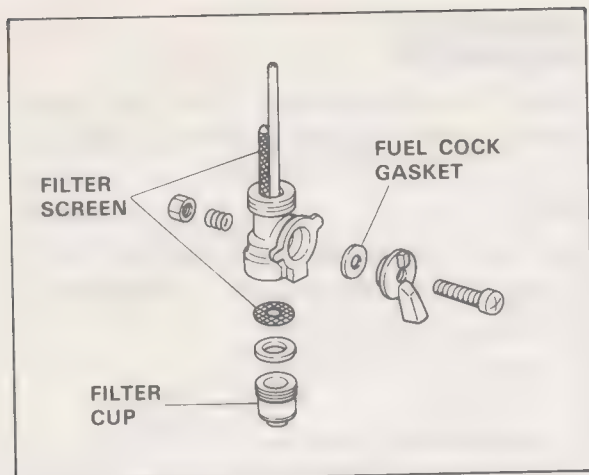
1. Clean the fuel filter
 - a. Drain the fuel from the fuel tank.
 - b. Remove the Phillips-head screw on the fuel cock and remove the fuel cock assembly.
 - c. Clean the filter.

NOTE: _____

If the filter is damaged, replace its assembly.

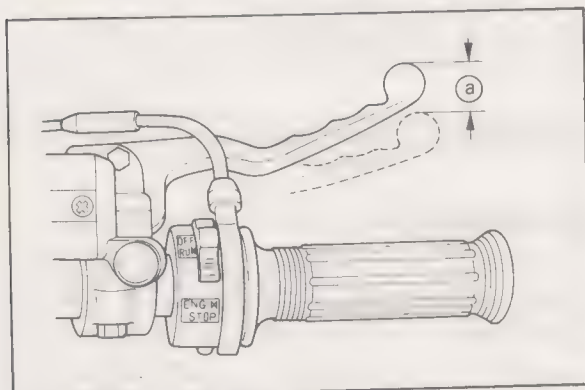


1. Fuel cock



B. Front Brake Lever Free Play

1. The front brake lever should have a free play of 5 ~ 8 mm (0.2 ~ 0.3 in) at the lever end. If the free play exceeds 5 ~ 8 mm (0.2 ~ 0.3 in), check as follows.
 - a. Check the brake lever and lever holding bolt for wear out.
 - b. Bleed air at the caliper.
 - c. Check the master cylinder and caliper inner parts.



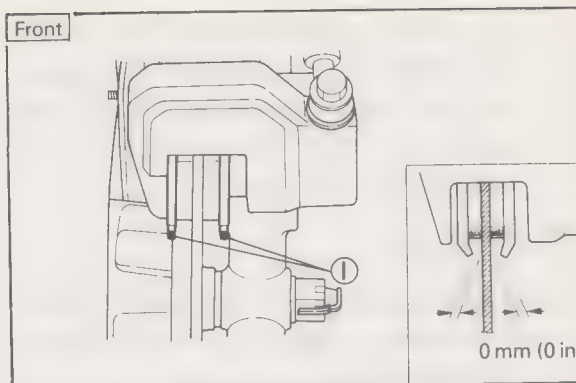
a 5 ~ 8 mm (0.2 ~ 0.3 in)

CAUTION:

Proper lever free play is essential to avoid excessive brake drag.

C. Checking the Disc Pads

For easy checking of wear on the disc brake pads, a wear indicator is attached to each brake pad. Check the clearance between the pad wear indicator and disc. If any pad is worn to the wear limit, replace the both pads in the caliper.

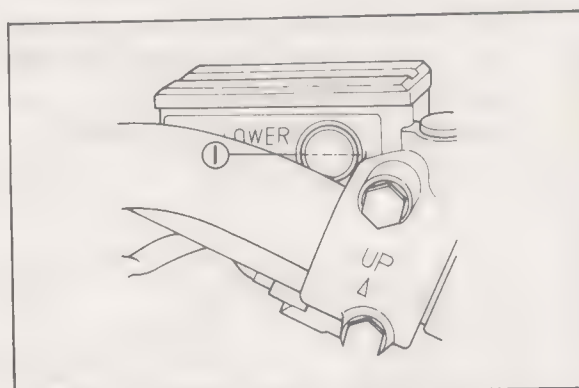


1. Wear indicator

* This figure shows the wear limit of the pads as they are installed in the caliper.

D. Check the Brake Fluid Level

Insufficient brake fluid may allow air to enter the brake system, possibly causing the brake to become ineffective. Check the brake fluid level and replenish when necessary and observe these precautions.



1. Lower level

1. Use only the designated quality brake fluid; otherwise, the rubber seals may deteriorate, causing leakage and poor brake performance.

Recommended brake fluids: DOT #3

2. Refill with the same type and brand of brake fluid; mixing fluids may result in a harmful chemical reaction and lead to poor performance.

3. Be careful that water or other contamination does not enter the master cylinder when refilling. Water will significantly lower the boiling point and may result in vapor lock.

CAUTION:

Brake fluid may erode painted surfaces or plastic parts. Always clean up spilled fluid immediately.

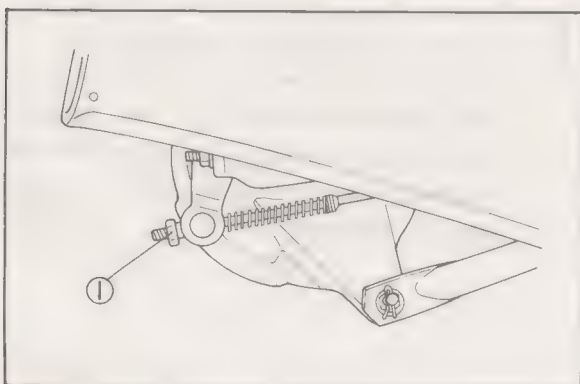
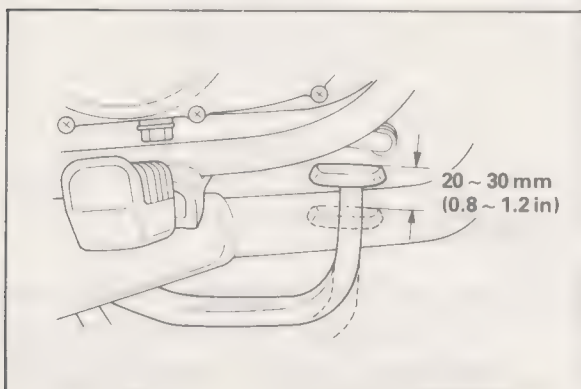
E. Rear Brake Adjustment

WARNING:

After adjusting the pedal height, the brake pedal free play should be adjusted.

1. Free play

The rear brake should be adjusted so the end of the brake pedal moves 20 ~ 30 mm (0.8 ~ 1.2 in). To adjust, turn the adjuster on the rear brake rod in or out until brake pedal free play is suitable.



1. Adjuster

WARNING:

Check to see whether or not the brake light operates correctly after adjusting.

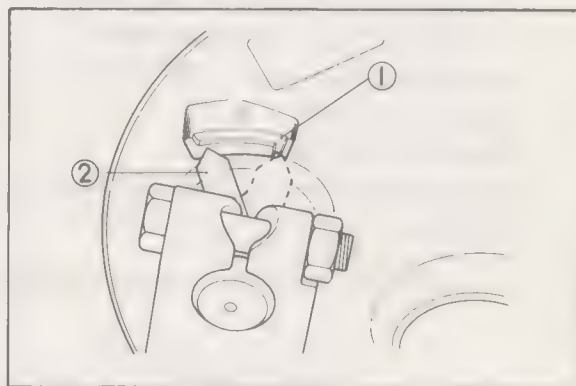
NOTE:

Rear brake pedal adjustment must be checked whenever chain is adjusted or rear wheel is removed and re-installed.

F. Brake Lining Check

To check, see the wear indicator position while depressing the brake pedal. If the indicator reaches to the wear limit line, replace the brake shoes.

Always replace shoes as a set.

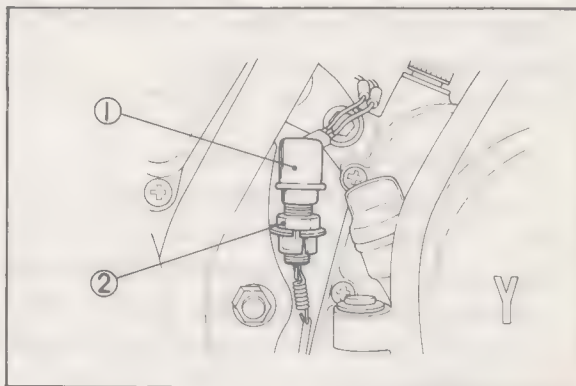


1. Wear limit

2. Wear indicator

G. Brake Light Switch Adjustment

The brake light switch is operated by movement of the brake pedal. To adjust, hold the main body of the switch with the hand so it does not rotate and turn the adjuster. Proper adjustment is achieved when the brake light comes on slightly before the brake begins to take effect.



1. Brake switch

2. Adjusting nut

H. Tire

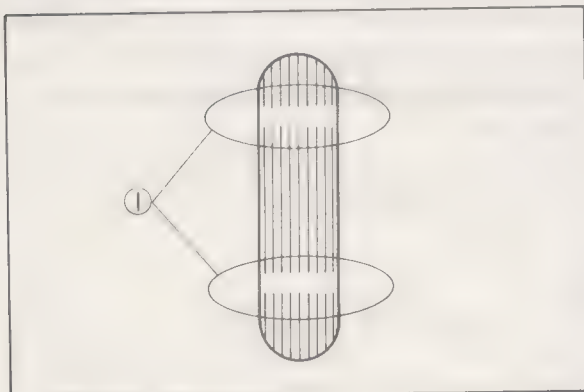
Improper tire pressure affects the smoothness of the tire, traction, handling and the life of the tires. Always maintain the correct tire pressure.

	FRONT	REAR
RX50K WEIGHT with oil and full fuel tank	38 kg (84 lb)	46 kg (101 lb)
Standard tire	Yokohama/Inoue 2.50-19-4PR	Yokohama/Inoue 3.50-16-4PR
Maximum load limit*	64 kg (140 lb)	109 kg (240 lb)
Cold tire pressure Normal riding	147 kPa (1.5 kg/cm ² , 22 psi)	147 kPa (1.5 kg/cm ² , 22 psi)
Minimum tire tread depth	0.8 mm (0.03 in)	0.8 mm (0.03 in)

*Total weight of the motorcycle with accessories, etc.

1. Before operation, always check the tire surfaces for wear and/or damage; look for cracks, glass, nails, metal fragments, stones, etc. Correct any such hazard before riding.

If a tire tread shows cross wise lines, it means that the tire is worn to its limit. Replace the tire.



1. Wear indicator

2. Tires and wheels should be balanced whenever either one is changed or replaced. Failure to have a wheel assembly balanced can result in poor performance, adverse handling characteristics, and shortened tire life.

3. After installing a tire, ride conservatively to allow the tire to seat itself on the rim properly. Failure to allow proper seating may cause tire failure resulting in damage to the motorcycle and injury to the rider.
4. After repairing or replacing a tire, check to be sure the valve stem lock nut is securely fastened. If not, torque it as specified.

TIGHTENING TORQUE:

2 Nm (0.2 m · kg, 1.4 ft · lb)

I. Drive Chain Tension Check

NOTE:

Before checking and/or adjusting, rotate the rear wheel through several revolutions and check tension several times to find the tightest point. Adjust chain tension with rear wheel in this "tight chain" position.

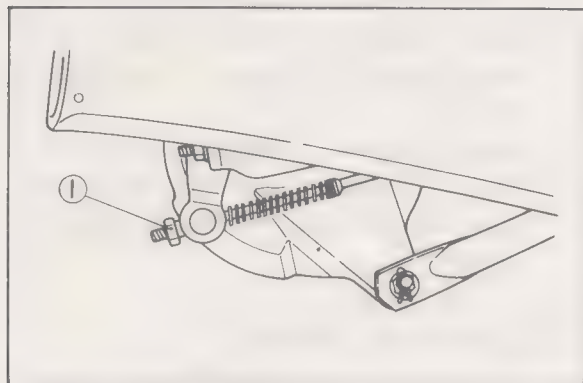
To check the chain play, the motorcycle must stand vertically with both wheels on the ground and without rider on it. Measure the play at the bottom of the chain at a point mid-way between the drive and driven sprockets. The normal vertical deflection is approximately 25 ~ 30 mm (1.0 ~ 1.2 in). If the deflection exceeds 30 mm (1.2 in) adjust the chain tension.



1. Chain free play

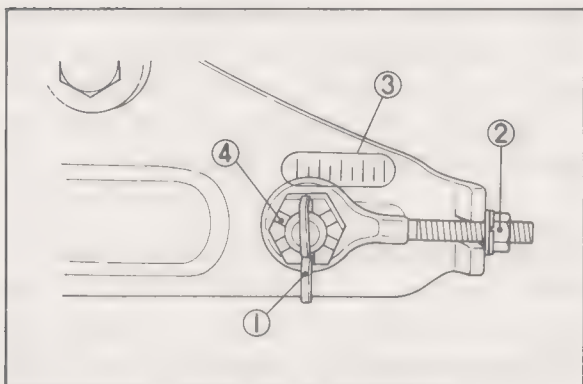
J. Drive Chain Tension Adjustment

1. Loosen the rear brake adjuster.



1. Adjuster

2. Remove the cotter pin from the rear wheel axle nut with pliers.
3. Loosen the rear wheel axle nut.

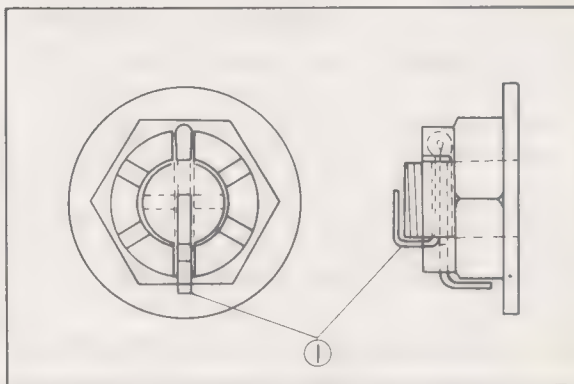


1. Cotter pin
2. Adjuster
3. Marks for alignment
4. Rear wheel axle nut

4. To tighten the chain, turn the chain puller adjuster clockwise. To loosen, turn the adjuster counterclockwise and push the wheel forward. Turn each nut exactly the same amount to maintain correct axle alignment.
(There are marks on each side of rear arm and on each chain puller; use them to check for proper alignment.)
5. After adjusting, be sure to tighten the rear wheel axle nut properly.

Rear axle securing nut torque:
60 Nm (6.0 m·kg, 43 ft·lb)

6. Tighten the adjusters against the rear arm (about 1/4 turn each).
7. Insert a new cotter pin into the rear wheel axle nut and bend the end of the cotter pin as shown in the illustration (if the nut notch and the cotter pin hole do not match, loosen the nut slightly to match).



1. Cotter pin

8. In the final step, adjust the play in the brake pedal.

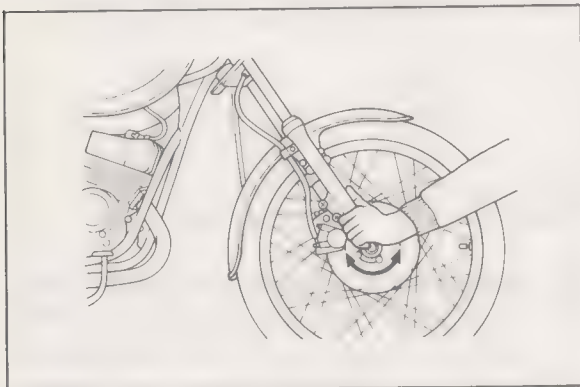
CAUTION:

Excessive chain tension will overload the engine and other vital parts; keep the tension within the specified limits. Also, replace the rear axle cotter pin with a new one.

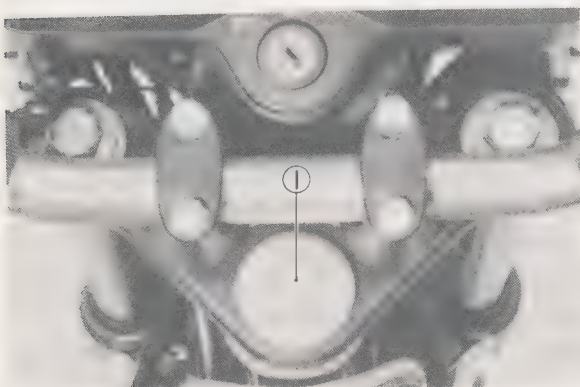
K. Steering Head Adjustment

The steering assembly should be checked periodically for looseness.

1. Elevate the front wheel by placing a suitable stand under the frame.
2. Grasp the bottom of forks and raise the front end of motorcycle so that there is no weight on the front wheel.
3. Gently rock the fork assembly backward and forward, checking for looseness in the steering assembly bearings.



4. If the steering head needs adjustment;
 - a. Remove the seat and fuel tank.
 - b. Loosen the steering stem bolt and pinch bolts.



1. Steering stem bolt



1. Pinch bolt

5. Using the ring nut wrench, adjust the steering head ring nut until the steering head is tight without binding when the forks are turned.



1. Steering nut

2. Ring nut wrench

NOTE:

Excessive tightening of this nut will cause rapid wear of ball bearings and races. Recheck for looseness and freedom of movement.

6. Tighten the steering stem bolt and pinch bolts.

TIGHTENING TORQUE:

Steering stem bolt:

40 Nm (4.0 m · kg, 2.9 ft · lb)

Pinch bolt:

23 Nm (2.3 m · kg, 17 ft · lb)

NOTE:

After completing steering adjustment, make certain the forks pivot from stop to stop without binding. If binding is noticed, repeat adjustment.

7. Install the fuel tank and seat.

ELECTRICAL

A. Ignition Timing

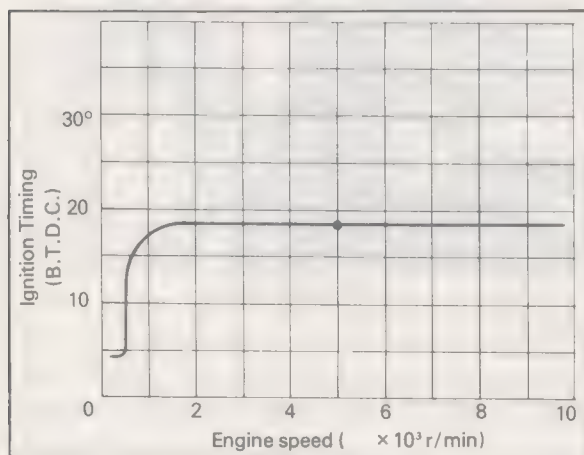
Capacitor discharge ignition (C.D.I.)

A capacitor discharge ignition (C.D.I.) system eliminates the need for a mechanical contact breaker and its inherent disadvantages. A simple electronic circuit using a large storage capacitor and a Thyristor (Silicon Control Rectifier) provides a correctly-timed, high-intensity voltage to the spark plug.

NOTE:

The ignition timing is pre-fixed at the factory. So no ignition timing adjustment is necessary.

Ignition timing (B.T.D.C.)
 $18 \pm 1.5^\circ$ at 5,000 r/min



B. Battery

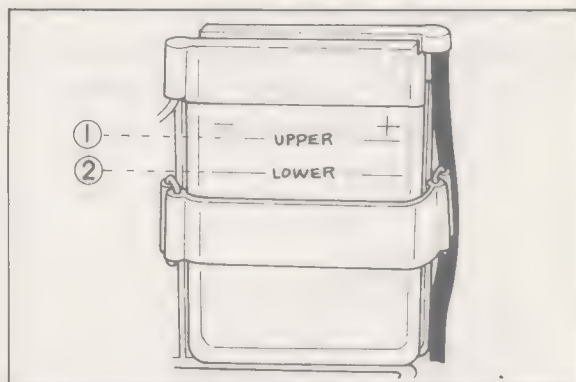
NOTE:

When filled with dilute sulfuric acid (electrolyte), this battery can be put into use immediately. That is, it is a dry-charged battery. It is advisable, however, that the battery be charged as much as possible before using to insure maximum performance. This initial charge will prolong the life of the battery.

Charging current: 0.4A
Charging hours: 10 hrs.

The battery fluid should be checked at least once a month.

1. The level should be between the upper and lower level marks. Use only distilled water for refilling. Normal tap water contains minerals which are harmful to a battery; therefore, refill only with distilled water.



1. Upper level

2. Lower level

2. Always make sure the connections are correct when installing the battery. The red lead is for the \oplus terminal and the black lead is for the \ominus terminal. Make sure the breather pipe is properly connected and is not damaged or obstructed.

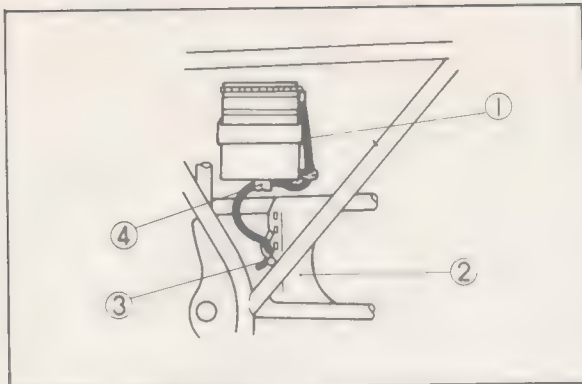
WARNING:

Battery electrolyte is poisonous and dangerous, causing severe burns, etc. It contains sulfuric acid. Avoid contact with skin, eyes or clothing. Antidote: EXTERNAL-Flush with water.

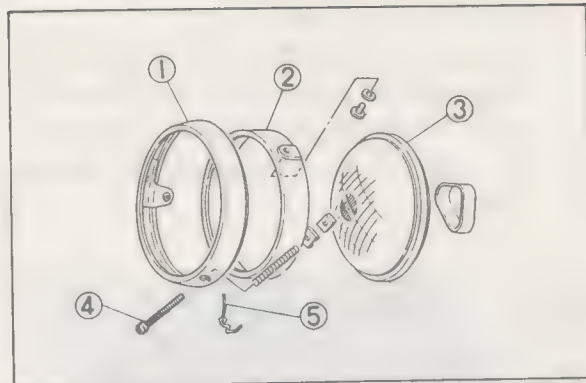
INTERNAL-Drink large quantities of water or milk. Follow with milk of magnesia, beaten egg or vegetable oil. Call physician immediately.

Eyes: Flush with water for 15 minutes and get prompt medical attention. Batteries produce explosive gases. Keep sparks, flame, cigarettes, etc., away. Ventilate when charging or using in enclosed space. Always shield eyes when working near batteries.

KEEP OUT OF REACH OF CHILDREN.



- 1. Breather pipe
- 2. Swingarm
- 3. Breather pipe guide
- 4. Pipe holder



- 1. Headlight rim
- 2. Headlight retainer
- 3. Headlight unit assembly
- 4. Adjusting screw
- 5. Set spring

C. Headlight

Headlight unit assembly replacement

1. Remove the two screws holding the light unit assembly to the headlight body.



2. Disconnect the lead wires and remove the light unit assembly.



3. Remove the headlight adjusting screw from the headlight rim and remove the defective unit assembly.

4. Install a new headlight unit assembly into the rim and secure it.

WARNING:

Keep flammable products or your hand away from the unit assembly while it is on; it gets hot. Do not touch the unit until it cools down.

5. Reinstall the light unit assembly to the headlight body. Adjust the headlight beam if necessary.

Headlight beam adjustment

1. Horizontal adjustment:

To adjust the beam to the right (as you're sitting on the bike), turn the adjusting screw clockwise.

To adjust the beam to the left, turn the screw counterclockwise.



2. Vertical adjustment:

Loosen the headlight holding bolts. Adjust vertically by moving the headlight body. When proper adjustment is attained, retighten the headlight body holding bolts.

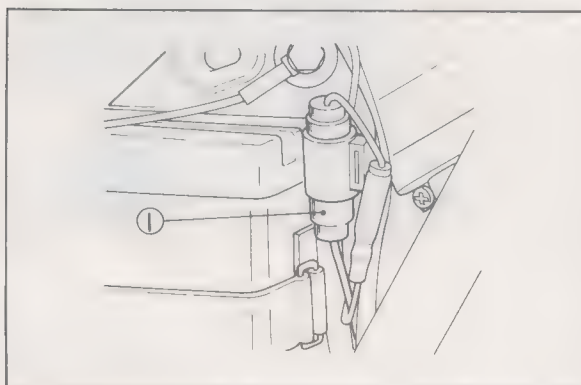


D. Fuse

The main fuse is located behind the right side cover. If the fuse is blown, turn off the ignition switch and the switch in the circuit in question; install a new fuse of proper amperage. Turn on the switches, and see if the electrical device operates. If the fuse immediately blows again, check the circuit in question (refer to "Chapter 6. ELECTRICAL").

WARNING:

Do not use fuse of a higher amperage rating than those recommended. Substitution of a fuse of improper rating can cause extensive electrical system damage and a possible fire.



1. Fuse

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CHAPTER 3. ENGINE OVERHAUL

ENGINE REMOVAL

NOTE: _____

It is not necessary to remove the engine in order to remove the clutch and/or the flywheel magneto.

A. Preparation for Removal

1. All dirt, mud, dust, and foreign material must be removed from the engine before removal and disassembly. This will help keep foreign material out of the engine oil.
2. Before engine removal and disassembly, be sure that you have the proper tools and cleaning equipment. With them, you can perform a clean and efficient job.

NOTE: _____

When disassembling the engine, keep mated parts together. This includes gears, cylinder, piston, and other parts that have been "mated" through normal wear. Mated parts must be reused as an assembly or replaced.

3. During engine disassembly, clean all parts and place them in trays in the order of disassembly. This will speed up assembly time and help assure that all parts are correctly reinstalled in the engine.
4. Place the motorcycle on its side-stand. Start the engine and allow it to warm up. Stop the engine and drain the engine oil.
5. Remove the left and right side covers.

B. Seat and Fuel Tank

1. Remove the seat holding bolts and remove the seat.



1. Seat holding bolt

2. Turn the fuel cock to the "OFF" position and disconnect the fuel pipe.
3. Remove the bolt holding rear of fuel tank.



1. Fuel tank holding bolt

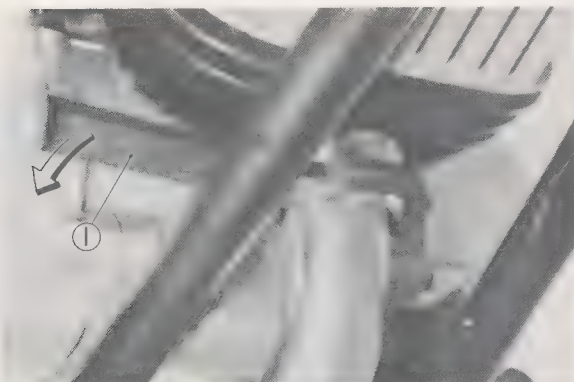
4. Lift up the rear of tank and slide back. Remove the fuel tank.

NOTE: _____

Be careful not to lose rubber dampers at front of tank.

C. Exhaust

1. Remove the ring nut holding the exhaust pipe to the cylinder. Use the ring nut wrench.



1. Ring nut wrench

2. Remove the muffler holding bolt and muffler assembly.



D. Change pedal

1. Remove the bolts securing change pedal and link rod. Remove the change pedal assembly.

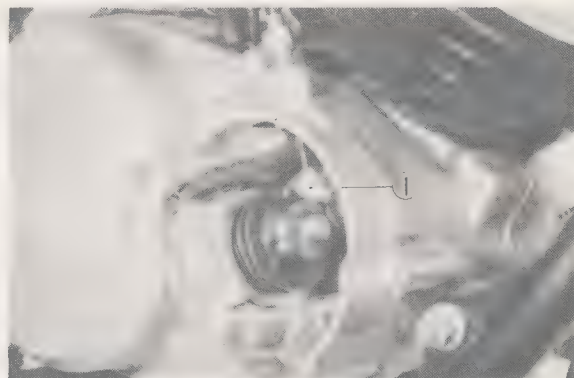
E. Wiring and cables

1. Remove the spark plug cap.
2. Remove the oil pump cover.
3. Remove the oil pipe at the oil pump. Remove the delivery pipe at the carburetor.

NOTE: _____

Plug the oil pipe so oil will not run out of the oil tank.

4. Rotate the pump pulley to full throttle position and remove the wire clip and wire end from the pulley seat.
5. Remove the pump cable.



1. Pump cable

6. Remove the left-side crankcase cover.
7. Remove the clutch cable from the handlebar lever first, then from the clutch push lever.



8. Remove the tachometer cable.



9. Remove the flywheel magneto connector and leads.



F. Carburetor

1. Loosen carburetor hose clamps.



2. Remove the carburetor top cover and throttle valve assembly.
3. Push the air cleaner joint off the carburetor inlet and carefully remove the carburetor.

G. Drive Chain

1. Remove the circlip.



1. Circlip

2. Remove the drive sprocket together with the drive chain.

H. Removal

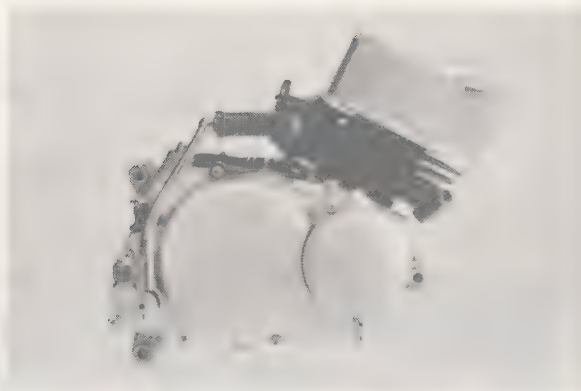
1. Remove the rubber cap from the left-tube frame.
2. Remove the three engine mounting bolts.



3. Remove the engine from the right side of the frame.



DISASSEMBLY



A. Cylinder Head and Cylinder

1. Remove the cylinder head holding nuts and remove the cylinder head.

NOTE: _____

- a. Loosen the spark plug before loosening the cylinder head.
- b. Each cylinder head bolt should be loosened 1/2 turn first, then it should be fully loosened.



2. Remove the cylinder head gasket.
3. Remove the cylinder and base gasket.

B. Piston Pin and Piston

1. Remove the piston pin clip from the piston.

NOTE: _____

Before removing the piston pin clip, cover the crankcase with a clean rag so you will not accidentally drop the clip into the crankcase.



2. Push the piston pin from the opposite side, then pull out.

NOTE: _____

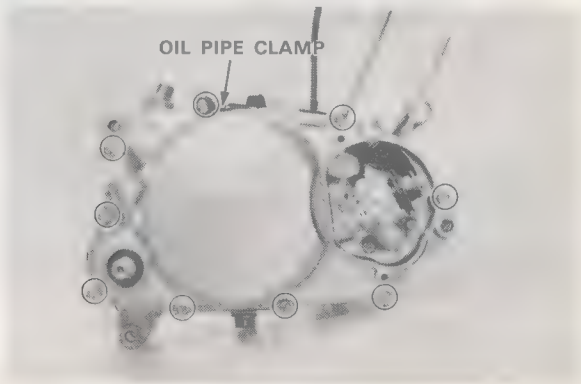
Before removing the piston pin, deburr the clip groove and pin hole area. If after the piston pin groove is deburred and the piston pin is still difficult to remove, use the piston pin puller.

C. Crankcase Cover (right)

1. Remove the kick crank securing bolt and kick crank.
2. Remove right-hand crankcase cover holding screws and the cover.

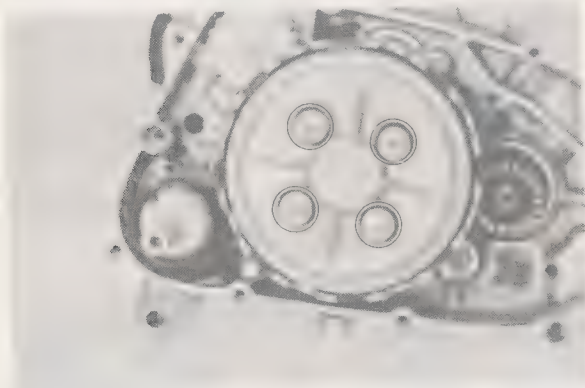
NOTE: _____

Crankcase cover can be removed without removing the Autolube pump assembly.



D. Clutch Assembly and Primary Drive Gear

1. Remove the clutch spring holding screws, pressure plate, clutch plates, friction plates, cushion rings, push rod and ball.



2. Loosen the primary drive gear by first placing a folded rag between the teeth of the primary gears to lock them. Remove the nut and washer.



3. Install the clutch holding tool on the clutch boss. Remove the nut and washer.



4. Remove the driven gear assembly.

E. Kick Axle Assembly

1. Unhook the kick spring from its post. Then remove the kick axle assembly by rotating the shaft counterclockwise and then pulling out the entire assembly.



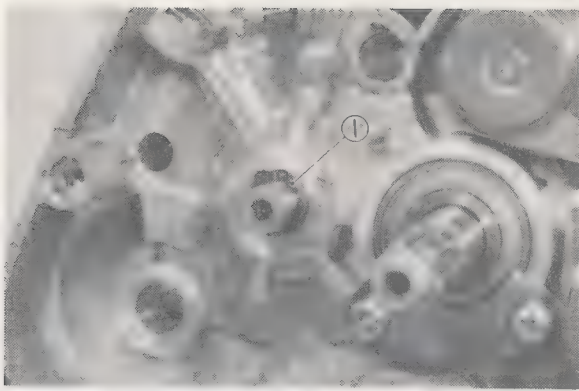
2. Remove the tachometer drive gear and washer.



3. Remove circlips, washer and remove the kick.



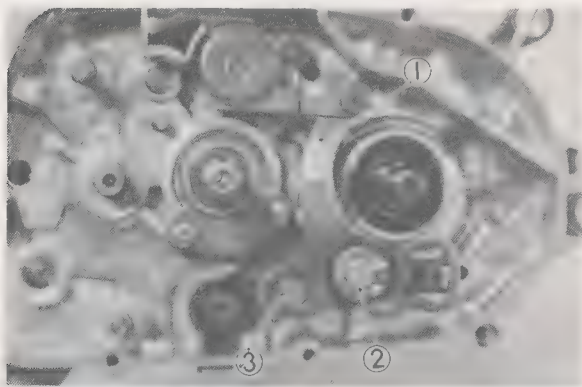
4. Remove the circlip from the drive axle.



1. Circlip

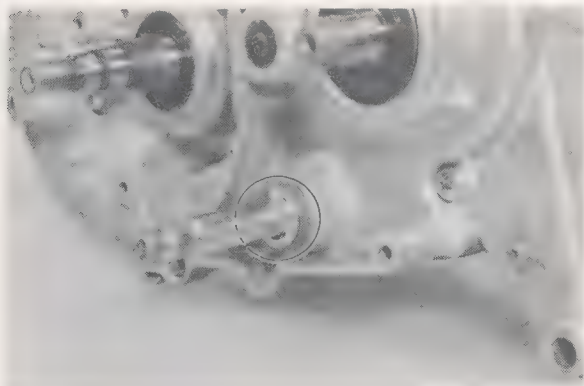
F. Change Shift Lever Assembly

1. Remove the circlip and pull the shift lever out from the right-side crankcase.



1. Shift lever 2. Circlip 3. Collar

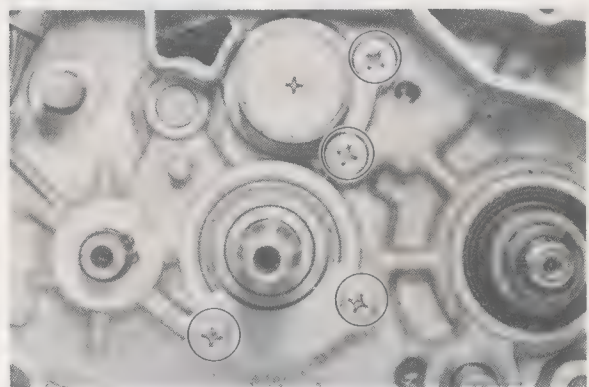
2. Remove the circlip and washer from the left-side crankcase.



3. Remove the shift shaft from the right-side crankcase.

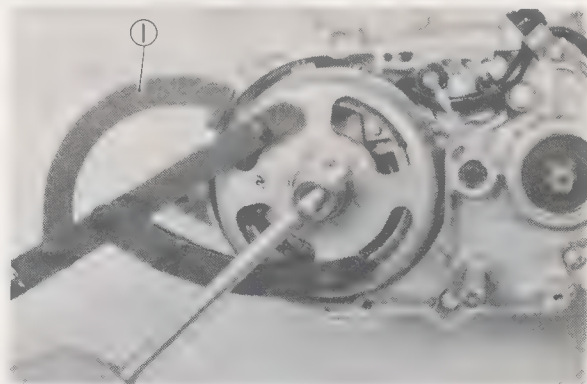


4. Remove the bearing stopper plate and shift cam stopper plate.



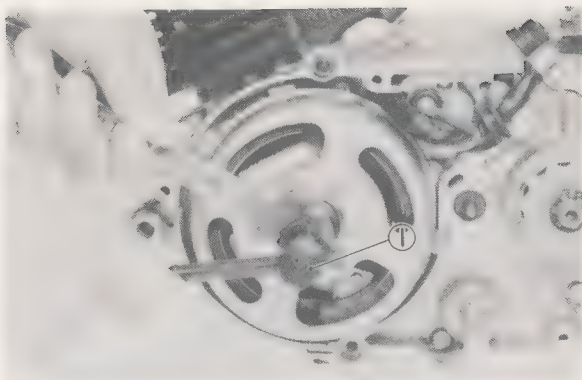
G. Flywheel Magneto

1. Remove the flywheel securing bolt. Hold the flywheel magneto with the universal magneto holder.



1. Universal magneto holder

2. Remove the flywheel magneto using the flywheel puller.

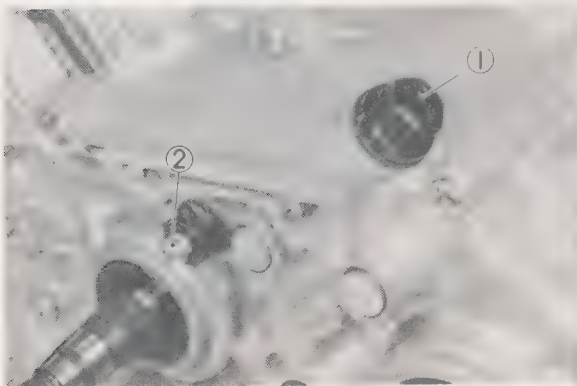


1. flywheel puller

3. Remove the woodruff key.
4. Disconnect the neutral switch lead.
5. Remove the CDI magneto base from the crankcase.

H. Neutral Switch and Cam Shift Stopper

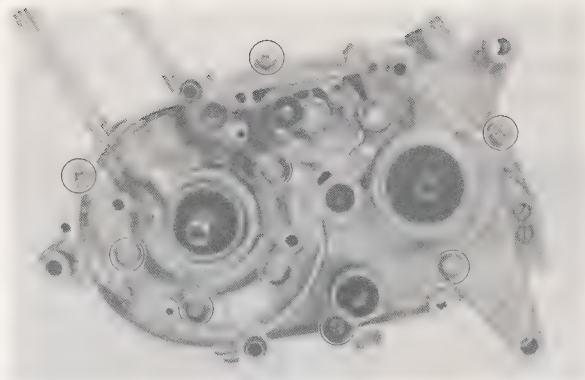
1. Remove the neutral switch and cam-shift-stopper from the left-side crankcase.



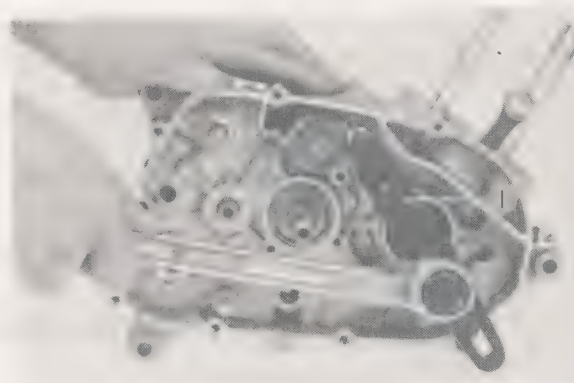
1. Cam shift stopper 2. Neutral switch

I. Crankcase

1. Remove crankcase holding bolts. Loosen each bolt 1/4 turn and proceed to the next.



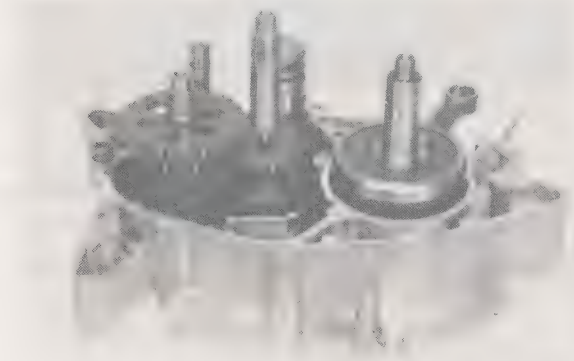
2. Remove the right-side crankcase from the left-side crankcase, and remove the two dowels. Use a crankcase separating tool.



1. Crankcase separating tool

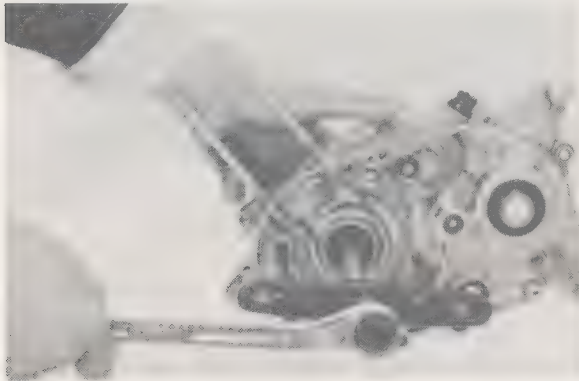
J. Transmission

1. Remove the guide bar, shift forks, shift cam, and transmission by tapping with a soft-faced hammer or the hands.



K. Crankshaft

Remove the crankshaft assembly using the crankcase separating tool.

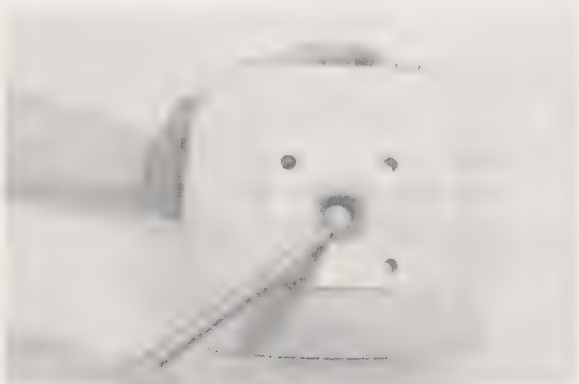


Cylinder warp limit: 0.03 mm (0.001 in)

INSPECTION AND REPAIR

A. Cylinder Head

1. Using a rounded scraper, remove carbon deposits from the combustion chamber. Take care to avoid damaging spark plug threads. Do not use a sharp instrument. Avoid scratching the aluminum.



2. Using a straight edge and a thickness gauge, check the warpage of sealing surface of the cylinder head. Measurements should be made at six positions, A to F.

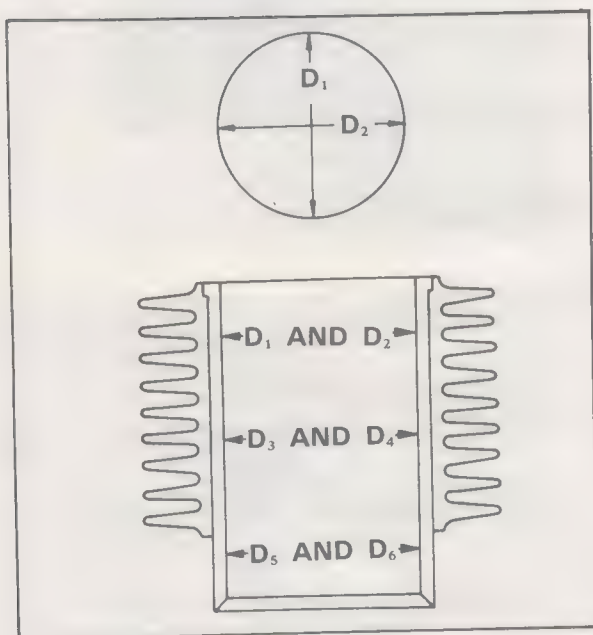
3. Correct by re-surfacing as follows:
Place 400 ~ 600 grit wet sandpaper on a surface plate and re-surface the head using a figure-eight sanding pattern. Rotate the head several times to avoid removing too much material from one side.



B. Cylinder

1. Visually check the cylinder walls for scratches. If vertical scratches are evident, the cylinder wall should be rebored or the cylinder should be replaced.
2. Measure cylinder wall wear in the manner as shown. If wear is excessive, compression pressure will decrease, and engine trouble will occur. Rebore the cylinder wall, and replace the piston and piston rings.

Cylinder wear should be measured at three depths by placing the measuring instrument parallel to and at right angles to the crankshaft. (See the illustration.) If the cylinder wall is worn beyond the wear limit, it should be rebored.



Cylinder bore size	40 mm (1.58 in)
Cylinder taper limit	0.05 mm (0.002 in)

C. Piston and Piston Rings

Piston

1. Using the micrometer, measure the outside diameter of the piston at the piston skirt. Measurement should be made at a point 9.5 mm (0.37 in) above the bottom edge of the piston by placing the micrometer parallel to and at right angles to the piston pin.

Piston clearance:

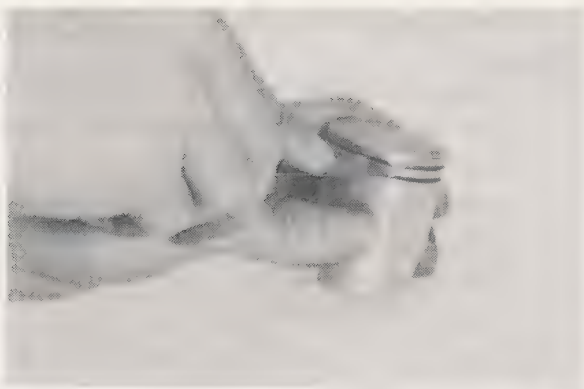
0.035 ~ 0.040 mm (0.0014 ~ 0.0016 in)



	Size
Oversize 1	40.25 mm (1.59 in)
Oversize 2	40.50 mm (1.60 in)

2. Piston ring/ring groove fit must have correct clearance. If the piston and ring have already been used in the engine, the ring must be removed, the ring groove cleaned of carbon, then the ring should be reinstalled. Use a feeler gauge to measure the gap between the ring and the land.

Side clearance	Top	0.02 ~ 0.06 mm (0.008 ~ 0.024 in)
	2nd	0.02 ~ 0.06 mm (0.008 ~ 0.024 in)



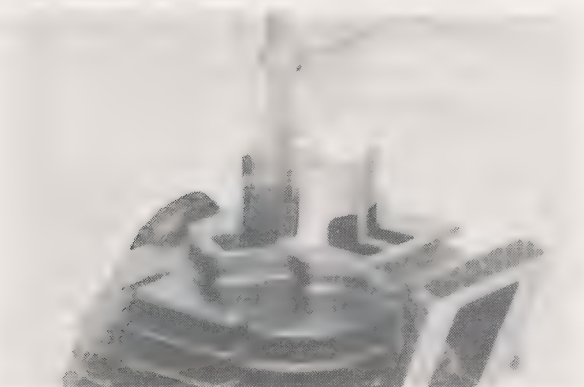
Piston ring

The oversize top and middle ring sizes are stamped on top of the ring.

Oversize 1	
Oversize 2	

1. Measure the end gap of each piston ring. Insert a ring into the cylinder, and push it approximately 20 mm (0.8 inches) into the cylinder. Push the ring with the piston crown so the ring will be at a right angle to the cylinder bore.
2. Measure the ring end gap with a feeler gauge. If the end gap exceeds tolerance, replace the whole set of rings.

Top ring	0.15 ~ 0.35 mm (0.006 ~ 0.014 in)
2nd ring	0.15 ~ 0.35 mm (0.006 ~ 0.014 in)



Piston pin

1. Lightly oil the piston pin, and install it in the small end of the connecting rod.
2. Check the free play. There should be no noticeable vertical play. If any free play exists, check the connecting rod for wear. Replace the pin and connecting rod as required.
3. Insert the piston pin in the piston, and check the free play. There should be no noticeable free play when the pin is in place in the piston. If the piston pin is loose, replace the pin and/or the piston as required.

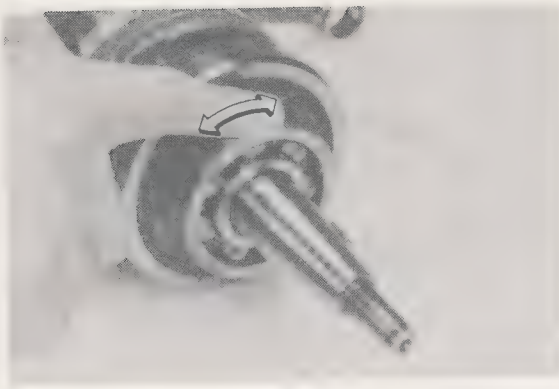


D. Crankshaft and Connecting Rod Crankshaft bearing

1. Bearings should be cleaned, dried, and the races visually checked for pits, rust spots, or chatter marks where the balls have dragged. If any of these conditions exist, the bearings should be replaced.

NOTE: _____

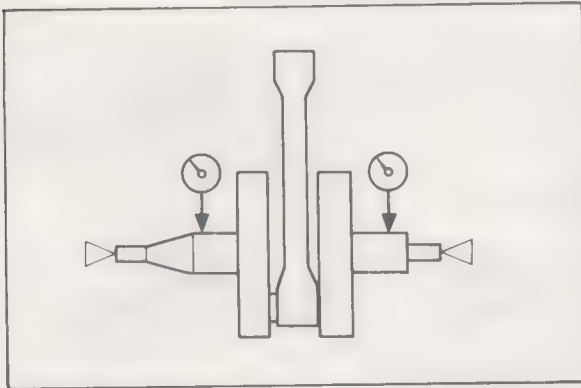
Lubricate the bearings immediately after examining them to prevent rust.



Crankshaft runout

1. Support the crankshaft at both ends on V-blocks. Rotate the crankshaft in the V-blocks, and measure the runout at the main bearing journals. Use a dial gauge.
2. If runout exceeds the specification, replace crankshaft.

Maximum crankshaft runout:
0.03 mm (0.012 in)



E. Clutch

Clutch housing

1. Check the dogs on the clutch housing. Look for cracks and signs of galling on the edges. If damage is moderate, deburr; if severe, replace the clutch.

NOTE:

Galling on the clutch plate splines will cause erratic operation.



2. Check for circumferential play by hand. If excess play exists, replace it.

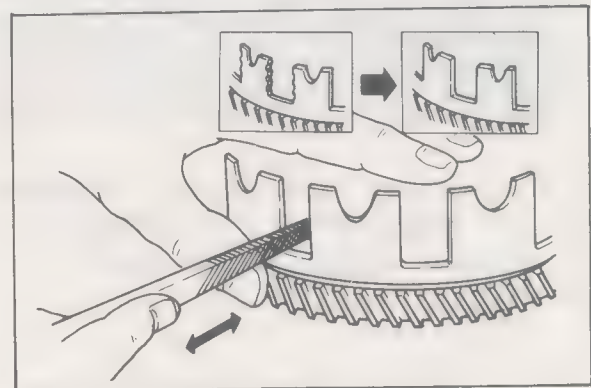


Clutch boss

1. Check the splines on the clutch boss for galling. If damage is slight to moderate, deburr; if it is severe, replace the clutch boss.

NOTE:

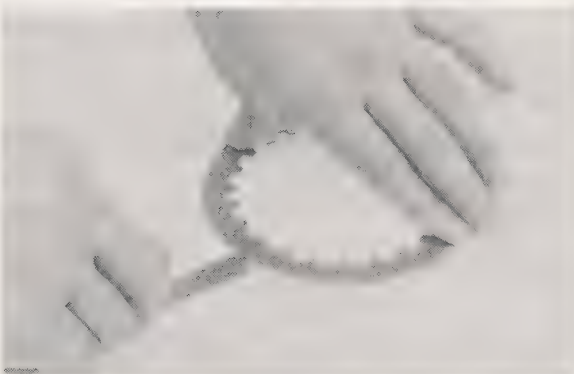
Galling on clutch plate splines will cause erratic operation.



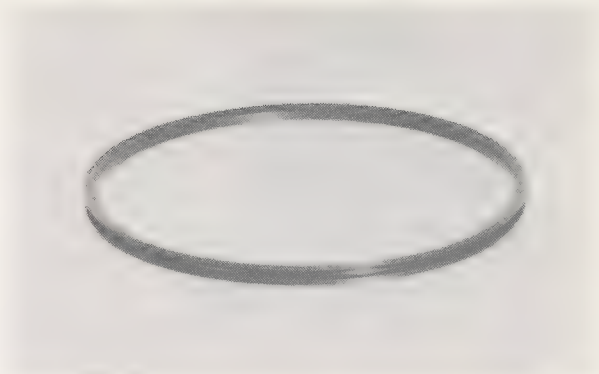
Friction and clutch plates

1. Check the clutch plates and friction plates for heat damage. Measure friction plate thickness at 3 or 4 points. Measure the clutch plates for warpage with a feeler gauge and surface plate. Replace clutch plates or friction plates as a set if any is faulty or beyond wear limits.

	Standard	Wear limit
Friction plate thickness	3.5 mm (0.14 in)	3.2 mm (0.13 in)
Clutch plate warp limit	2.0 mm (0.080 in)	0.05 mm (0.002 in)



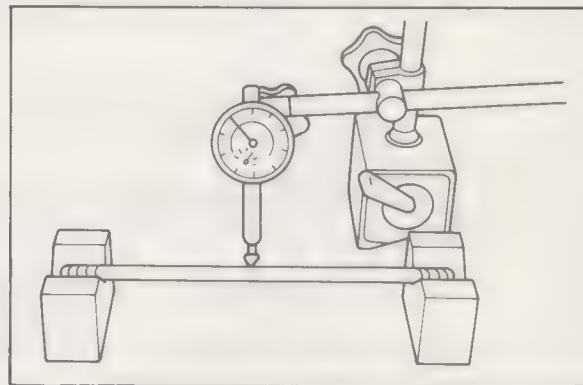
2. Check the cushion rings for fatigue or breakage. If any one is fatigued or broken, replace all cushion rings.



Clutch actuating mechanism

1. Check the short push rod for wear and damage; replace if damaged.
2. By rolling the long push rod on the "V" blocks, check for bends. If any bend is found, replace the push rod.

Bend limit: 0.5 mm (0.02 in)



Clutch springs

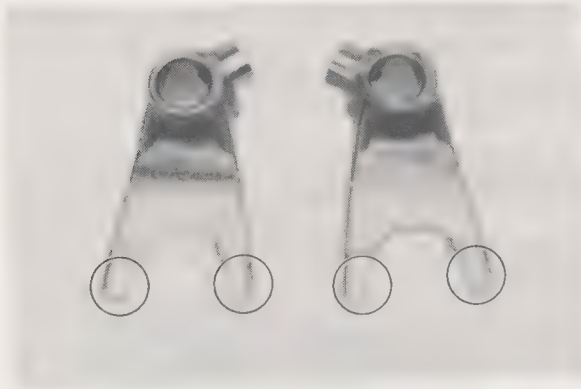
1. Measure the clutch spring free length. Replace the springs as a set if any is less than minimum free length.

Clutch spring minimum length:
26.2 mm (1.031 in)

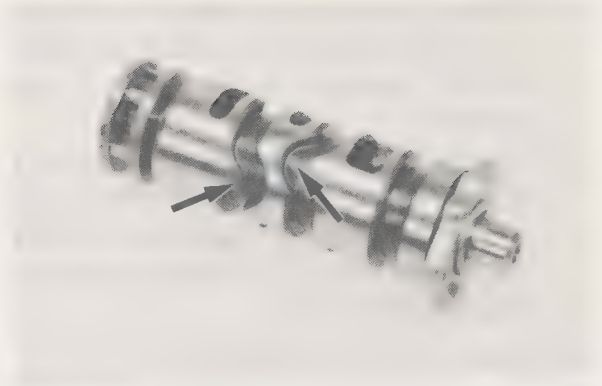


F. Transmission

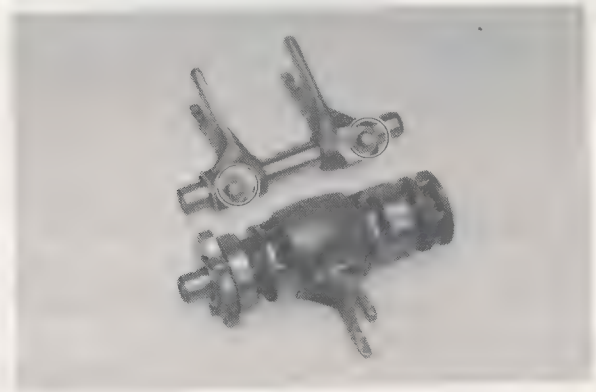
1. Inspect each shift fork for signs of galling on the gear contact surfaces. Check for bending. Make sure each fork slides freely on its guide bar.



2. Roll the guide bar across a surface plate. If the bar is bent, replace it.
3. Check the shift cam grooves for signs of wear or damage. If any profile has excessive wear and/or damage, replace the cam.



4. Check the cam followers on each shift fork for wear. Check the ends that ride in the grooves in the shift cam. If they are worn or damaged, replace the shift fork.

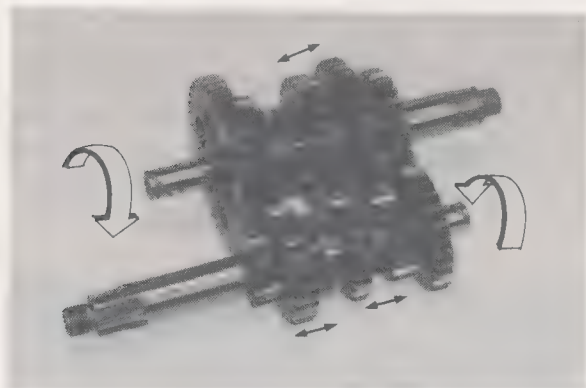


5. Check the shift cam dowel and side plate for looseness, damage, or wear. Replace as required.
6. Check the shift-cam stopper plate, circlip, and stopper for wear. Replace as required.
7. Check the transmission shafts using a centering device and dial gauge. If any shaft is bent beyond the specified limit, replace the shaft.

Maximum runout: 0.08 mm (0.0031 in)

8. Carefully inspect each gear. Look for signs of obvious heat damage (blue discoloration). Check the gear teeth for signs of pitting, galling, or other extreme wear. Replace as required.
9. Check to see that each gear moves freely on its shaft.

10. Check to see that all washers and clips are properly installed and undamaged. Replace bent or loose clips and bent washers.
11. Check to see that each gear properly engages its counterpart on the shaft. Check the mating dogs for rounded edges, cracks, or missing portions. Replace as required.



G. Kick Starter

1. Check the clip for damage and wear, and determine whether or not it should be replaced.
2. The pressure of the kick clips is 1.0 kg. If it is too strong, spring wear and kick starter slipping will result. On the other hand, if it is too weak, the same slippage will occur particularly at low temperatures. Do not try to bend the clip.

	Minimum	Maximum
Kick clip force	0.8 kg (1.8 lb)	1.3 kg (2.9 lb)

H. Tachometer Gear

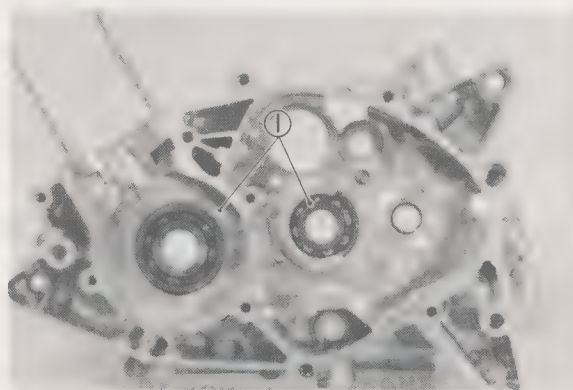
1. Check the driven gear and drive gear for any signs of galling. Replace as required.
2. Check the O-ring and oil seal, and replace if damaged.

I. Bearings and Oil Seals

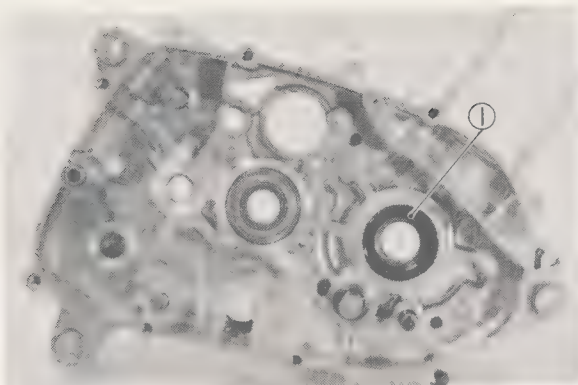
1. After cleaning and lubricating bearings, rotate the outer race with a finger. If rough spots are noticed, replace the bearing.
2. Check oil seal lips for damage and wear. Replace as required.
3. Installation
Install bearing(s) and oil seal(s) with their manufacturer's marks or numbers facing outward. (In other words, the stamped letters must be on the exposed view side.) When installing bearing(s) or oil seal(s), apply a light coating of light weight lithium base grease to balls and seal lip(s).

J. Crankcase

Right-side crankcase

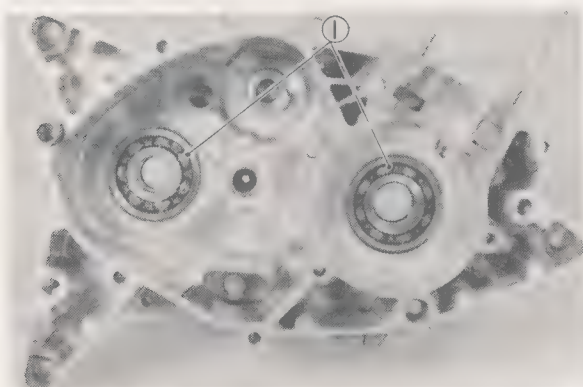


1. Ball bearing

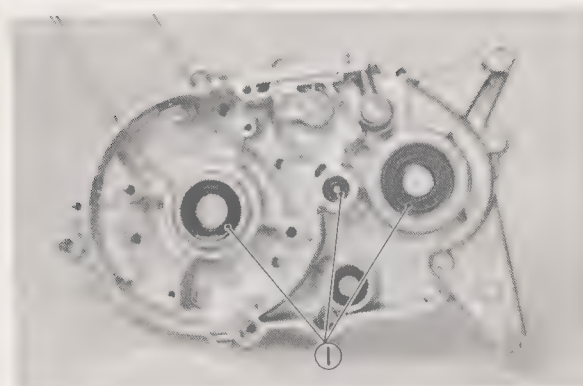


1. Oil seal

Left-side crankcase



1. Ball bearing



1. Oil seal

6. Check oil delivery passages for signs of blockage.
7. If bearings have not been removed, oil them thoroughly immediately after washing and drying. Rotate the bearing, and check for roughness indicating damaged races or balls.

1. Thoroughly wash the case halves in a mild solvent.
2. Clean all gasket mating surfaces and crankcase mating surface thoroughly.
3. Visually inspect the case halves for any cracks, road damage, etc.
4. Check all fittings not previously removed for signs of looseness or damage.
5. If bearings have been removed, check their seats for signs of damage (such as the bearing spinning in the seat, etc.).

ENGINE ASSEMBLY AND ADJUSTMENT

A. Important Informations

1. Gasket and seal

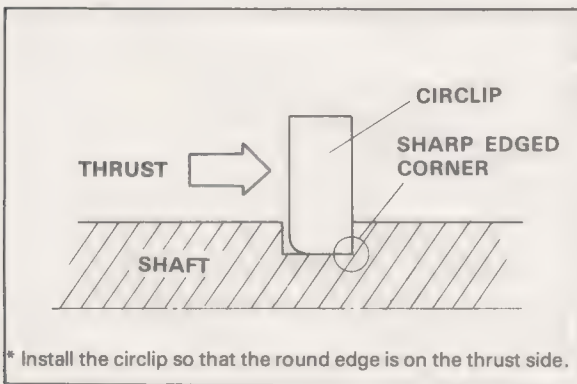
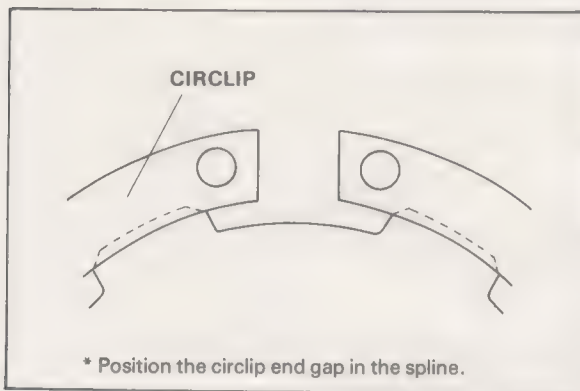
All gaskets and seals should be replaced when the engine is overhauled. All gasket surfaces and oil seal lips must be cleaned.

2. Properly oil all mating engine and transmission parts and bearings during reassembly.

3. Circlip

All circlips should be inspected carefully before reassembly. Always replace piston pin clips after one use. Replace distorted circlips.

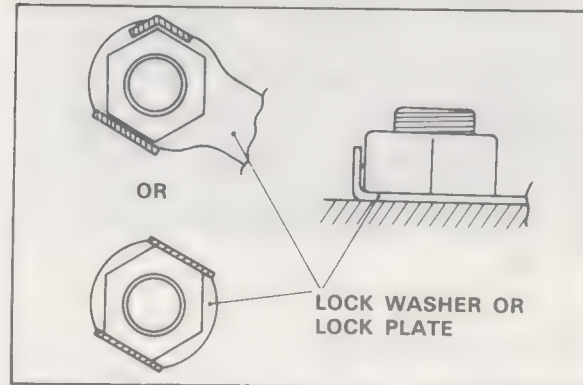
When installing a circlip, make sure that the sharp edged corner is positioned opposite to the thrust it receives. See the sectional view below.



4. Lock washer/plate and cotter pin

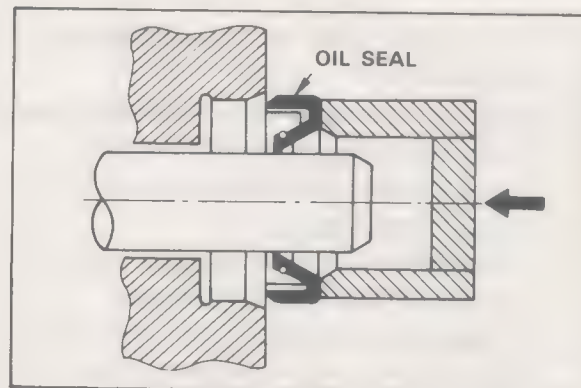
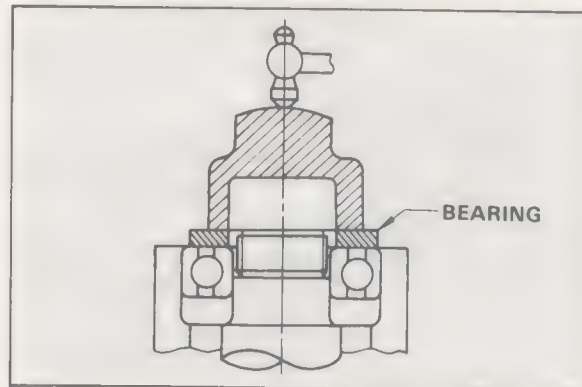
All lock washers/plates and cotter pins must be replaced when they are removed. Lock washer/plate tab(s) should be

bent over along the bolt or nut flat(s) after tightening the bolt or nut properly (see illustration).



5. Bearings and oil seals

Install the bearing(s) and oil seal(s) with their manufacturer's marks or numbers facing outward. (In other words, the stamped letters must be on the side exposed to view.) When installing oil seal(s), apply a light coating of lightweight lithium base grease to the seal lip(s). When installing bearings liberally oil the bearings.

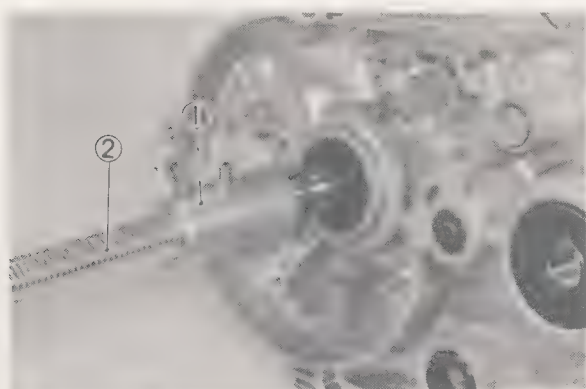


B. Crankshaft Installation

CAUTION:

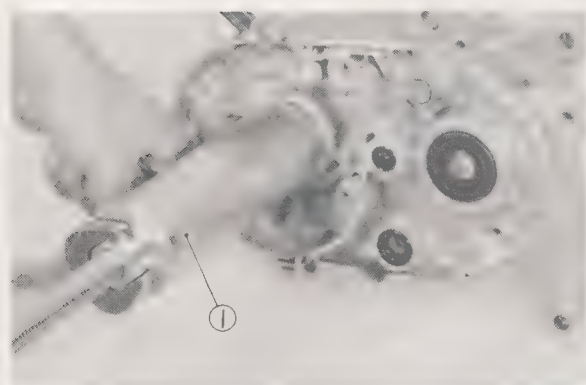
To protect the crankshaft against scratches or to facilitate the operation of installation: Pack the oil seal lips with grease. Apply engine oil to each bearing.

1. Set the crankshaft into the left case half and install with a crankshaft installing tool.
2. Hold the connecting rod at top dead center with one hand while turning the handle of the installing tool with the other. Operate the tool until the crankshaft bottoms against the bearing.



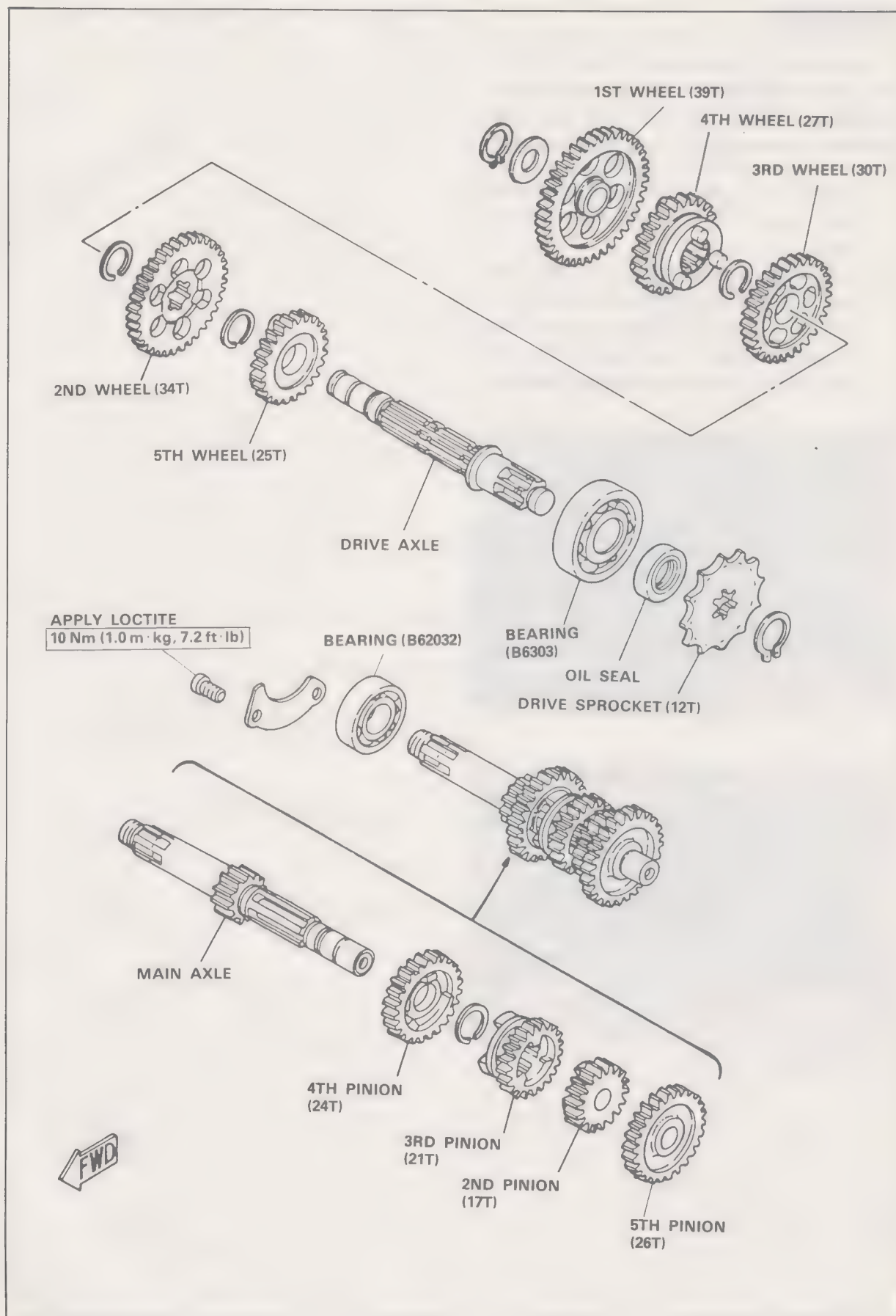
1. Adapter

2. Bolt



1. Crankshaft installing tool

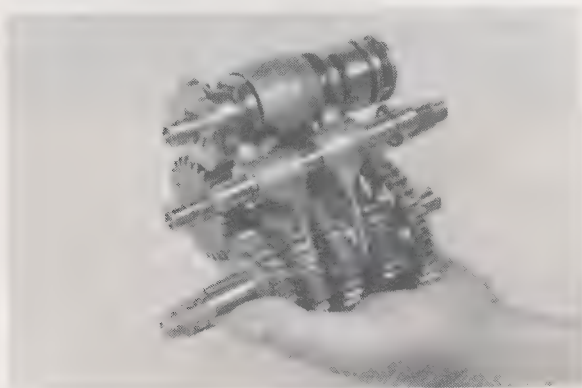
C. Transmission and Shifter Installation



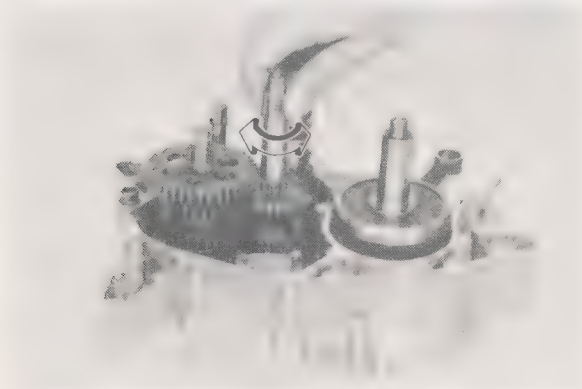
1. Install the shift fork(s) to the guide bar.
2. Install the transmission, shift cam, shift forks, and guide bar together into the left crankcase.

NOTE: _____

Exercise care not to damage the oil seal lip when installing the transmission into the case.

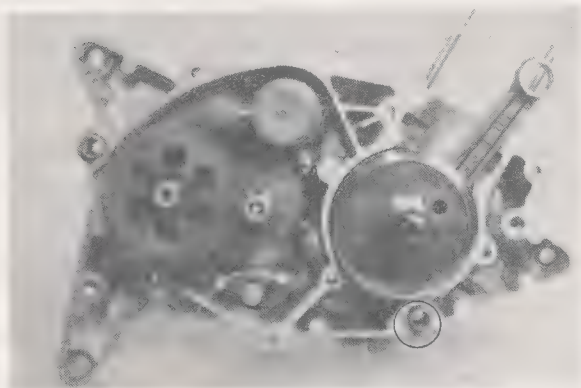


3. Check for correct transmission operation and make certain that all loose shims are in place. At the same time check for complete engagement of all engaging dogs into appropriate gear slots.



D. Crankcase

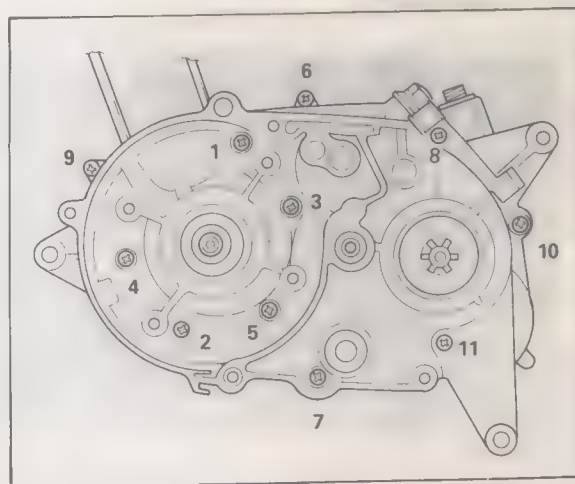
1. Install the two dowels into the left-side crankcase as shown in the photograph.



2. Apply YAMAHA BOND #4 to the mating surfaces of both case halves. Apply thoroughly over all mating surfaces.



3. Set the right side crankcase onto the left side crankcase. Install the crankcase holding bolts. Tighten the crankcase bolts in the following sequence.



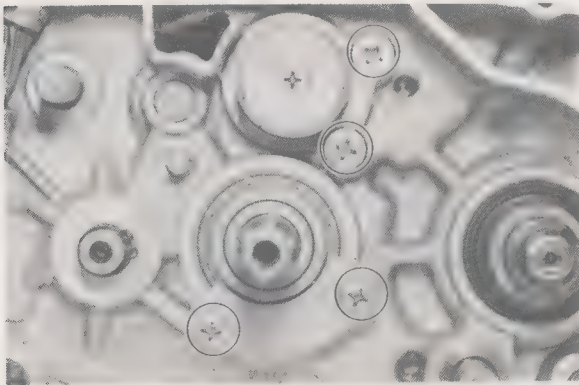
TIGHTENING TORQUE:

8.0 Nm (0.8 m · kg, 5.8 ft · lb)

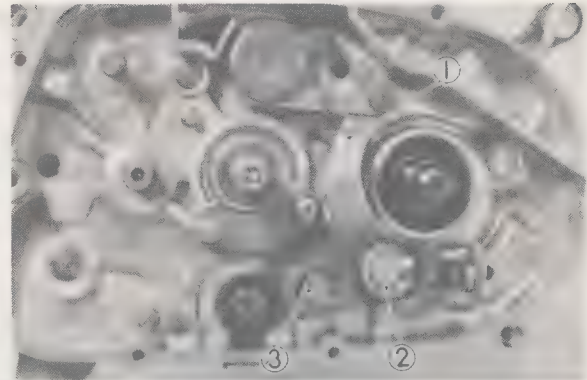
3. After reassembly, apply a liberal coating of two-stroke oil to the crank pin and bearing.
4. Check crankshaft and transmission shafts for proper operation and freedom of movement.
5. Install the bearing stopper plate, and cam shift stopper plate.
6. Apply Loctite® to the stopper plate screws, and torque the screws to specification.

TIGHTENING TORQUE:

10 Nm (1.0 m · kg, 7.2 ft · lb)



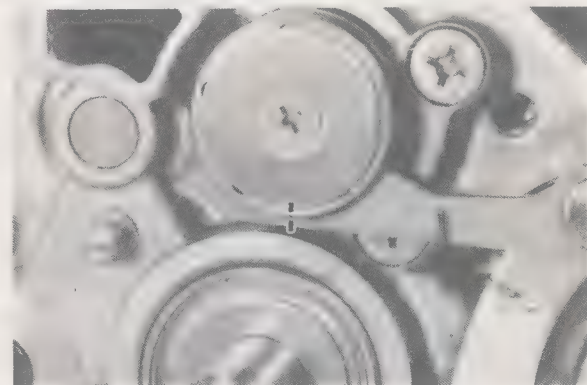
3. Install the shift lever and circlip.



1. Shift lever 2. Circlip 3. Collar

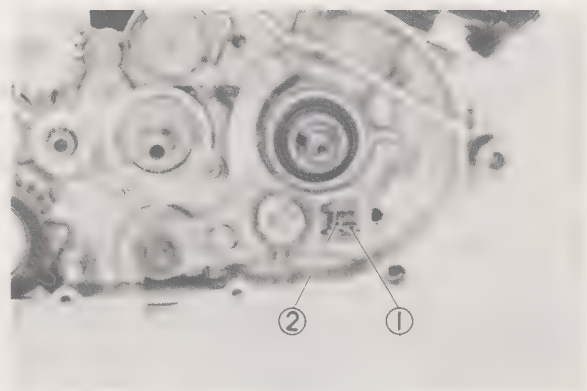
NOTE:

The line on the shift cam must align with the line on the shift lever. If not aligned, adjust by turning the adjusting screw.



E. Change Shift Lever Assembly

1. Install the shift shaft into the crankcase.
2. Install the washer and circlip onto the shift shaft.



1. Adjusting screw 2. Locknut

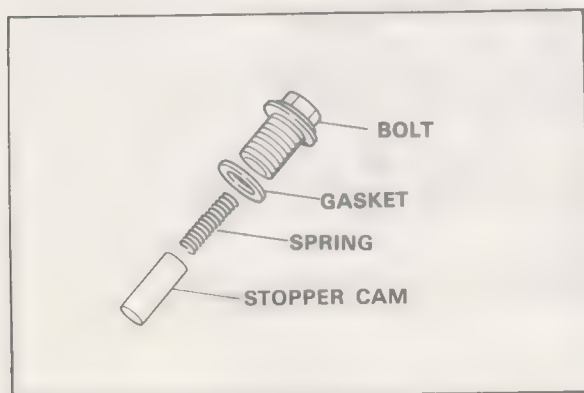
F. Neutral Switch and Cam Shift Stopper

1. Install the neutral switch with a new gasket. Torque the switch to specification.

TIGHTENING TORQUE:
20 Nm (2.0 m·kg, 14 ft·lb)

2. Install the cam shift stopper with a new gasket. Torque the bolt to specification.

TIGHTENING TORQUE:
20 Nm (2.0 m·kg, 14 ft·lb)



NOTE: _____

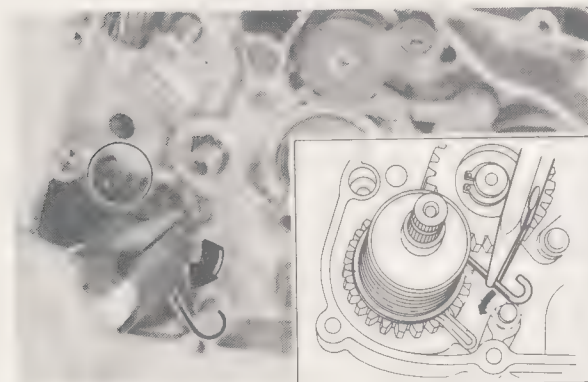
Make sure that the kick stopper is stopped at the projection of crankcase.

3. Check whether the kick starter acts correctly and whether it returns to its home position.
4. Install the circlips and the starter idle gear.
5. Install the washer and tachometer drive gear.



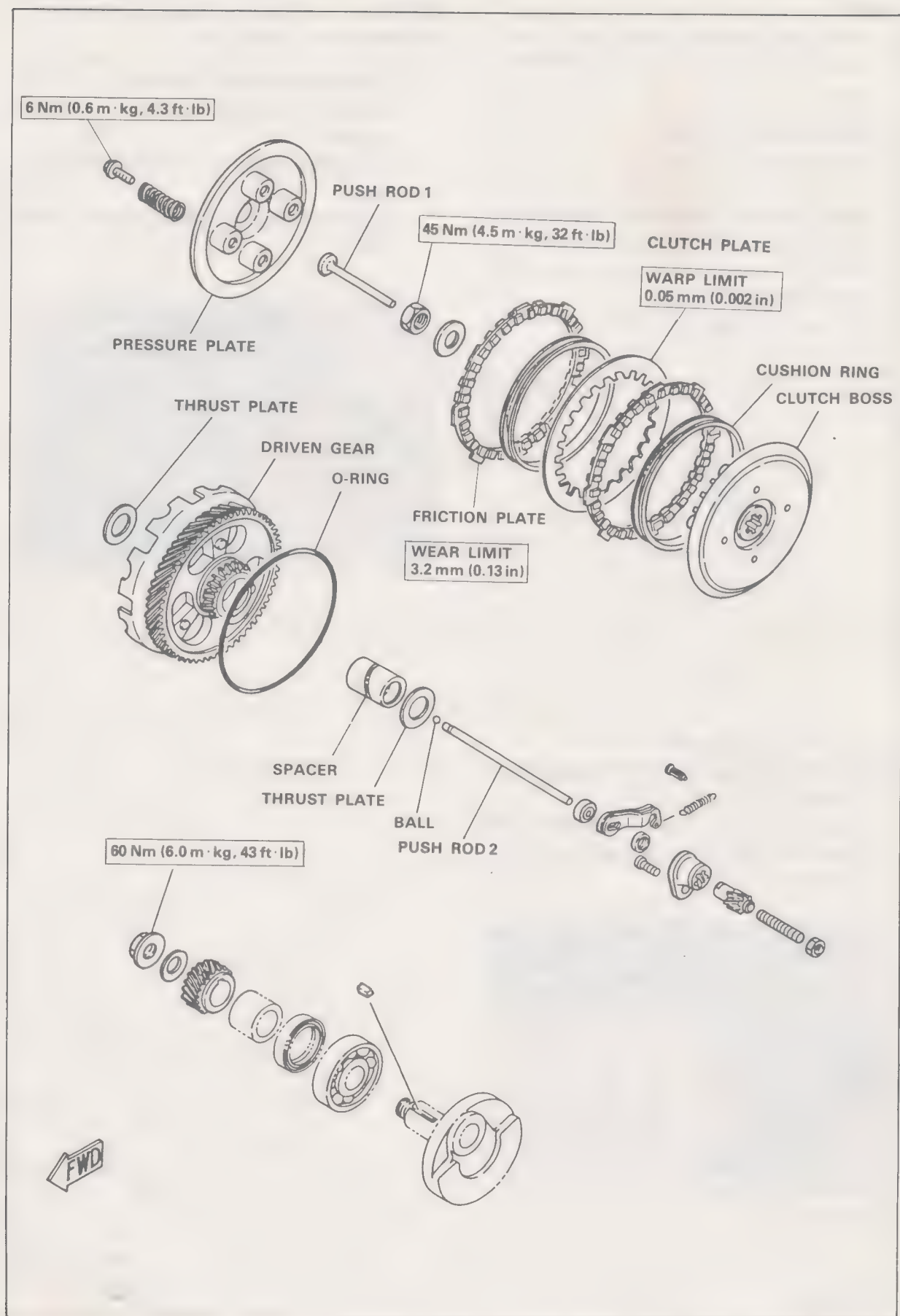
G. Kick Starter Assembly

1. Set the kick gear clip in the groove of crankcase.
2. Rotate the kick spring clockwise and hook the kick spring end to the hole of crankcase.



1. Kick spring

H. Clutch



1. Install the key onto the crankshaft. Install the primary drive gear, washer, and nut. Temporarily tighten the primary drive gear securing nut.



2. Install the thrust plates, spacer, primary driven gear and clutch boss.
3. Install the clutch holding tool on the clutch boss and tighten the locknut.

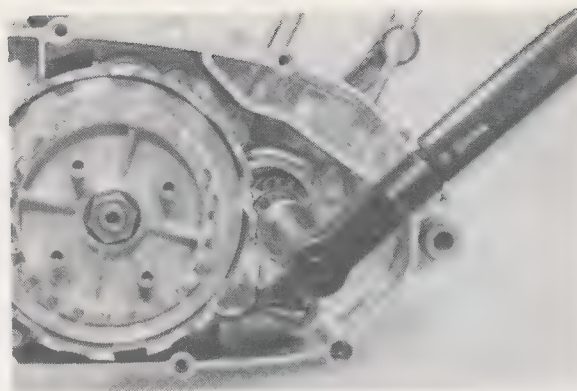


1. Clutch holding tool 2. Torque wrench

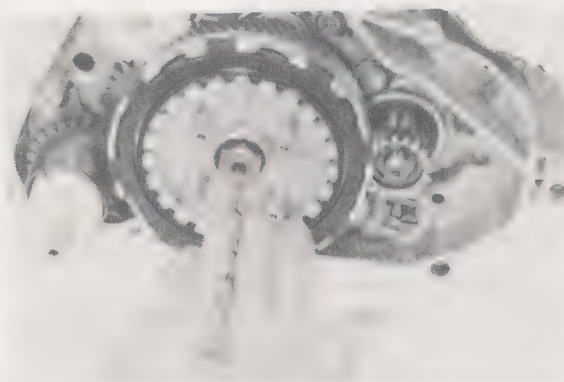
Clutch boss nut torque:
65 Nm (6.5 m · kg, 47 ft · lb)

4. Place a small piece of rolled rag or a piece of lead between the primary gears. This will hold the crankshaft so you can tighten the primary gear securing nut. Torque the securing nut to specification.

TIGHTENING TORQUE:
60 Nm (6.0 m · kg, 43 ft · lb)



5. Install the clutch plates, friction plates and cushion rings.
6. Install the steel ball and push rods into the main axle.

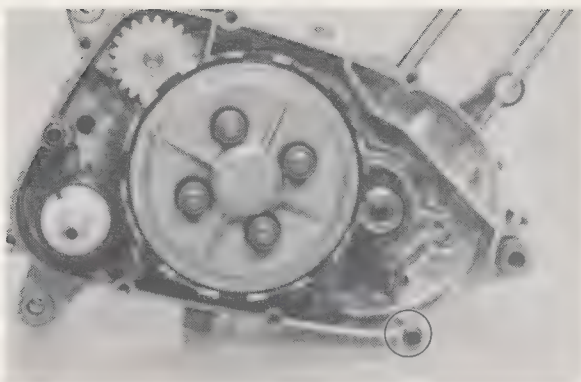


7. Install the clutch pressure plate and tighten the clutch spring holding screws.

TIGHTENING TORQUE:
6 Nm (0.6 m · kg, 4.3 ft · lb)

I. Crankcase Cover (right)

1. Install the two dowels in the right-side crankcase as shown in the photograph.



2. Install the crankcase cover with a new gasket and torque the nine (9) bolts to specification.

TIGHTENING TORQUE:
10 Nm (1.0 m·kg, 7.2 ft·lb)

3. Install the kick crank and tighten the pinch bolt to specification.

TIGHTENING TORQUE:
12 Nm (1.2 m·kg, 8.7 ft·lb)

J. Flywheel Magneto

1. Install the CDI magneto base and connect the sky blue lead to the neutral switch.
2. Install the woodruff key onto the left-side crankshaft.
3. Install the flywheel magneto washer, spring washer.
Using the universal magneto holder, tighten the magneto nut to specification.

TIGHTENING TORQUE:
50 Nm (5.0 m·kg, 36 ft·lb)



1. Universal magneto holder

K. Piston

1. During reassembly, coat the piston ring grooves, piston skirt area, piston pin, and bearing with two-stroke oil.
2. Install new piston pin clips and make sure they are fully seated in their grooves.

NOTE:

Take care during installation to avoid damaging the piston skirt against the crankcase as the cylinder is installed. Be sure the arrow stamped on the piston crown points forward.

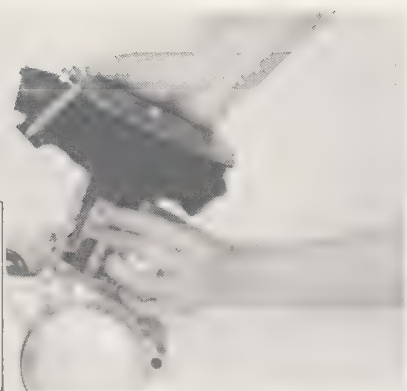
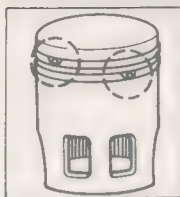


L. Cylinder

1. Install a new cylinder base gasket.
2. Install the cylinder with one hand while compressing piston rings with other hand.

NOTE:

Make sure the rings are properly positioned.

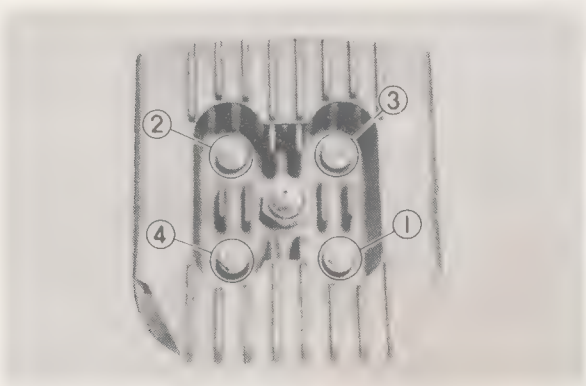


M. Cylinder Head

Install a new cylinder head gasket and the cylinder head.

NOTE:

The cylinder head bolts should be tightened in the order of numbers and in two steps.



Cylinder head tightening torque:
10 Nm (1.0 m·kg, 7.2 ft·lb)

MOUNTING

Mount the engine in the frame as follows

1. Place the engine in the frame.
2. Install the engine mounting bolts with proper tightening torque.

TIGHTENING TORQUE:

All engine mounting bolt:
23 Nm (2.3 m·kg, 17 ft·lb)

3. Install the drive sprocket, drive chain, and circlip.

Always use a new circlip and make sure it is fully seated in the groove.

4. Install the left-side crankcase cover.
5. Connect the clutch and tachometer cables. Adjust the clutch free play. Gradually turn the adjusting screw in until movement of the screw becomes relatively heavy. Back out the screw 1/4 turn and then tighten the locknut.



1. Adjuster

2. Locknut

Clutch lever free play:
2 ~ 3 mm (0.08 ~ 0.12 in)

6. Install the change pedal.
7. Install the carburetor assembly.
8. Install the exhaust muffler assembly.
9. Install the oil pump cable and adjust the oil pump free play.
10. Install the fuel tank and seat.
11. Add the transmission oil.

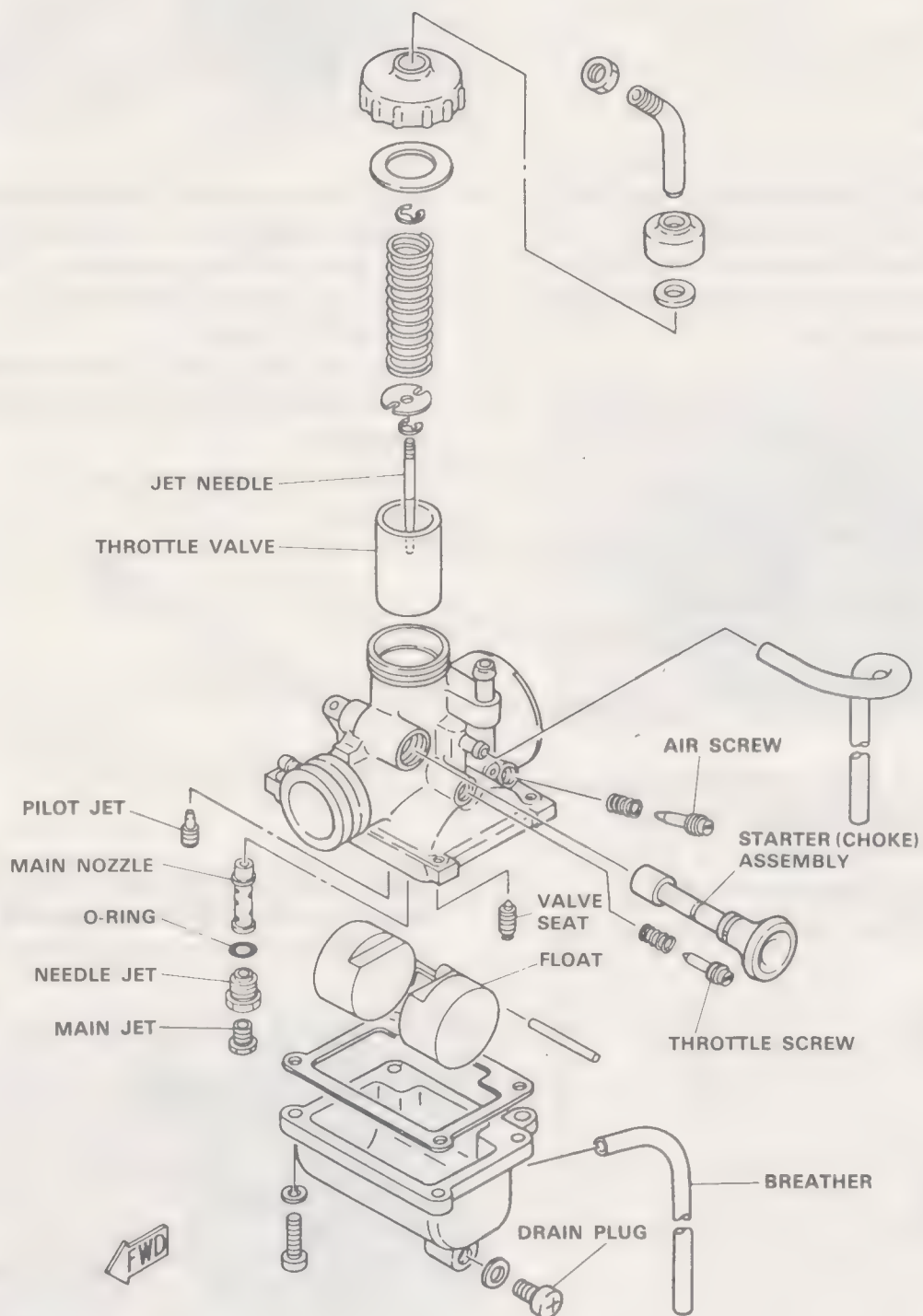
Oil capacity: 0.625 ~ 0.675 L
(0.55 ~ 0.59 Imp qt, 0.66 ~ 0.71 US qt)

CHAPTER 4. CARBURETION

CARBURETOR	4-1
A. Specification	4-2
B. Inspection	4-2
C. Adjustment	4-3
 REED VALVE ASSEMBLY	 4-4
A. Inspection	4-4

CHAPTER 4. CARBURETION

CARBURETOR



A. Specifications

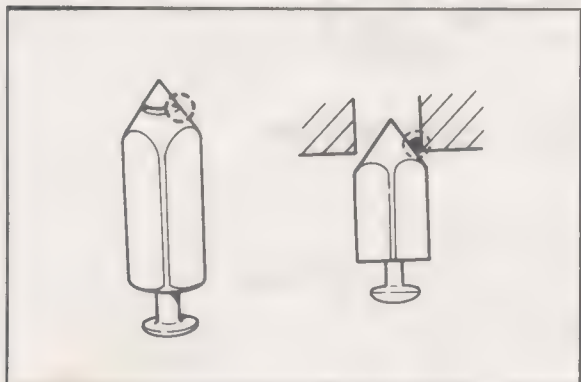
Type:	VM16SS
Main Jet:	# 110
Jet Needle:	4I5-3
Air Screw:	1 and 3/4
Pilot Jet:	#25
Float Height:	19 ± 1 mm (0.75 ± 0.04 in)
Engine Idling Speed:	1,300 ± 50 r/min

B. Inspection

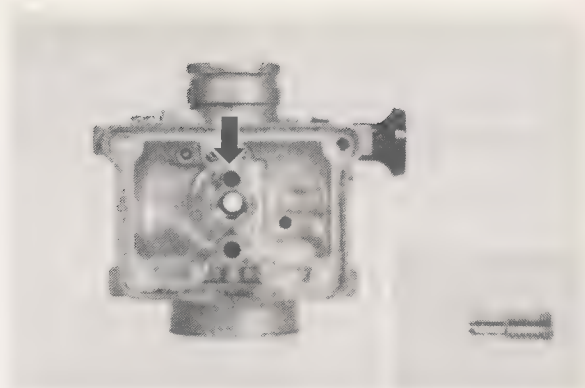
1. Examine carburetor body and fuel passages. If contaminated, wash carburetor in petroleum based solvent. Do not use caustic carburetor cleaning solutions. Blow out all passages and jets with compressed air.



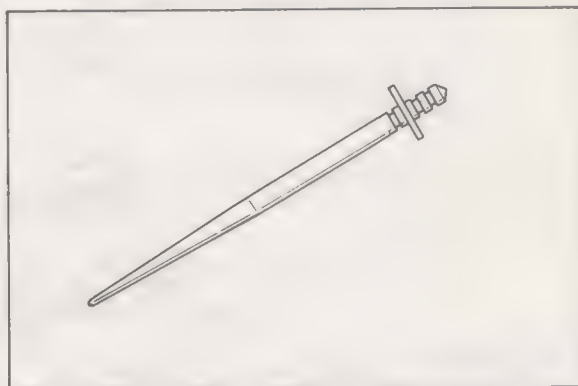
2. Inspect the needle and seat for signs of excessive wear or foreign particles. Check the valve seat for fatigue or breakage. Replace as required.



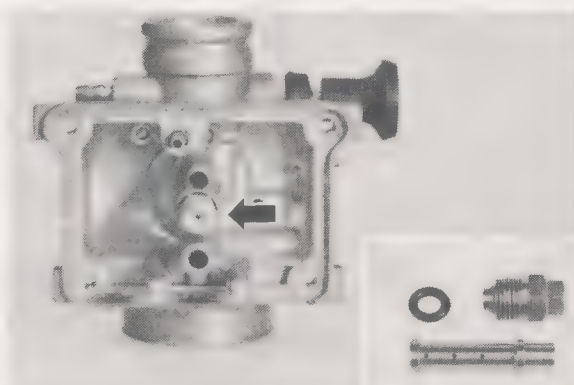
3. Inspect the pilot jet for signs of excessive wear or foreign particles. Replace as required.



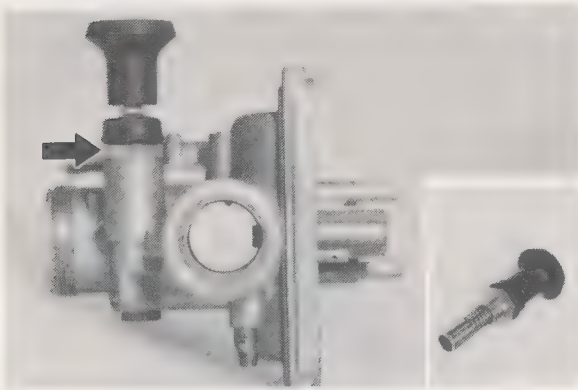
4. Inspect the throttle valve (slide) for signs of wear. Insert into the carburetor body and check for free movement. If the slide or body is out of round causing the slide to stick, replace.
5. Inspect the jet needle for bends or wear. If the needle is bent or severely worn, replace it.



6. Inspect the main jet, main nozzle, and O-ring for signs of excessive wear or foreign particles. Replace as required.



7. Inspect the starter (CHOKE) assembly. If worn or damaged, replace it.



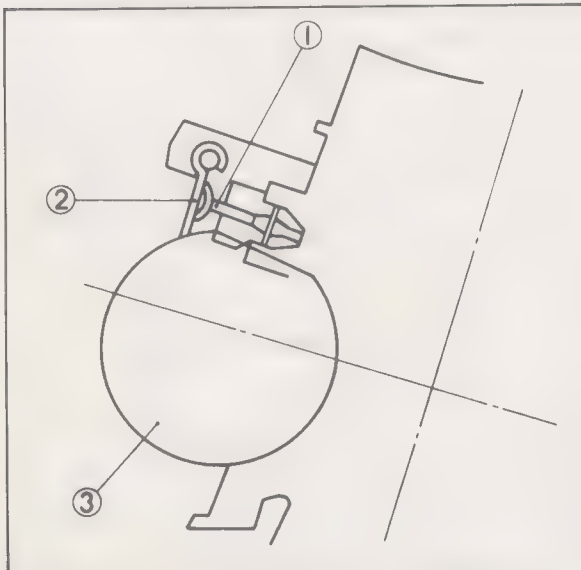
C. Adjustment

1. Float height
 - a. Reinstall components, except for the float chamber.
Incline the carburetor until the float arm tang lightly contacts the float valve (so that the end of the float valve does not hang down of float weight), and measure the distance from the mating surface of the float chamber (gasket removed) and carburetor to the top of the float using a gauge.

Float height:
 $19 \pm 1 \text{ mm } (0.75 \pm 0.04 \text{ in})$

NOTE:

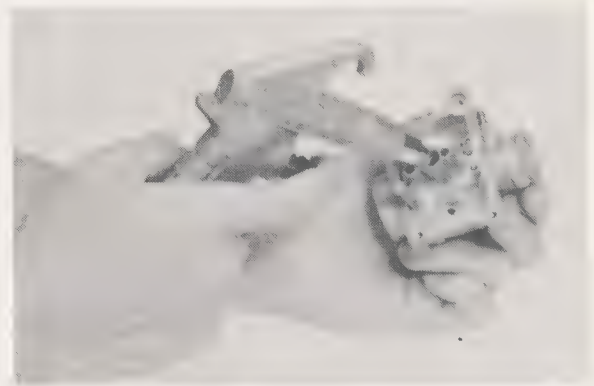
The float should be just resting on, but not depressing the spring loaded inlet needle.



1. Float valve 2. Float arm 3. Float

- b. If the float level is not within the specified range, check the valve seat and needle valve. And replace any damaged part.

If any part is in good condition but float level is not within the specified range, correct float level by bending the float arm tang slightly.



c. Adjustment

CAUTION:

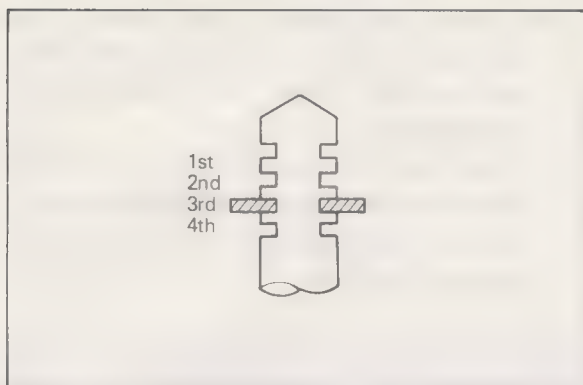
Check the float valve and valve seat for wear before adjustment.

Make the adjustment by bending the tang on the float arm.

2. Jet needle

If it is necessary to alter the mid-range air/fuel mixture characteristics of the machine, the jet needle position may be changed. Move the jet needle up for a leaner condition or toward the bottom position for a richer condition.

Jet needle type: 415
Clip position: No. 3 Groove



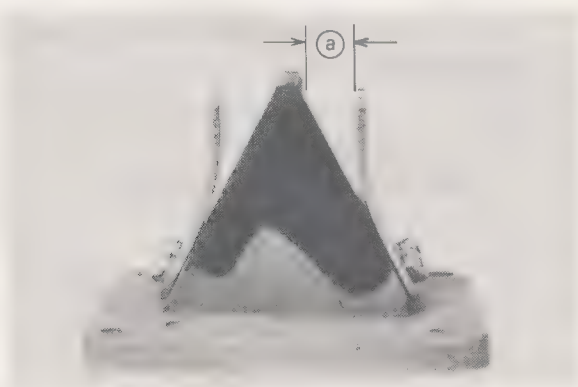
REED VALVE ASSEMBLY

A. Inspection

1. Inspect the rubber carburetor joint for signs of weathering, checking or other deterioration.
2. Inspect reed petals for signs of fatigue or cracks. Reed petals should fit flush or nearly flush against neoprene seats. If in doubt as to sealing ability, apply suction to the carburetor side of assembly. Leakage should be slight to moderate.
3. Check valve stopper clearance. If beyond tolerance, adjust the stopper or replace as required.

Standard value "a": 8.5 mm (0.335 in)

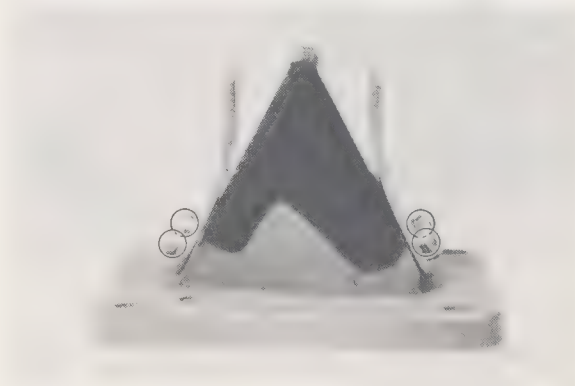
If it is 0.5 mm (0.02 in) more or less than specified, replace the valve stopper.



4. Check the reed valve for bending. If beyond tolerance, replace.

Reed valve bending limit:
0.3 mm (0.012 in)

5. During reassembly, clean the block, reed and stopper plate thoroughly. Apply a holding agent, such as "LOCTITE", to threads of Phillips screws. Tighten each screw gradually to avoid warping.



Torque: 1 Nm (0.1 m · kg, 0.7 ft · lb)

NOTE:

During reassembly, note the cut in the lower corner of the reed and stopper plate. Use as aid to the direction of reed installation.

6. During reassembly of the reed valve assembly and carburetor joint, install new gaskets and torque the securing bolts gradually and in pattern to the proper torque.

Reed valve securing bolt torque:
8 Nm (0.8 m · kg, 5.8 ft · lb)

CHAPTER 5. CHASSIS

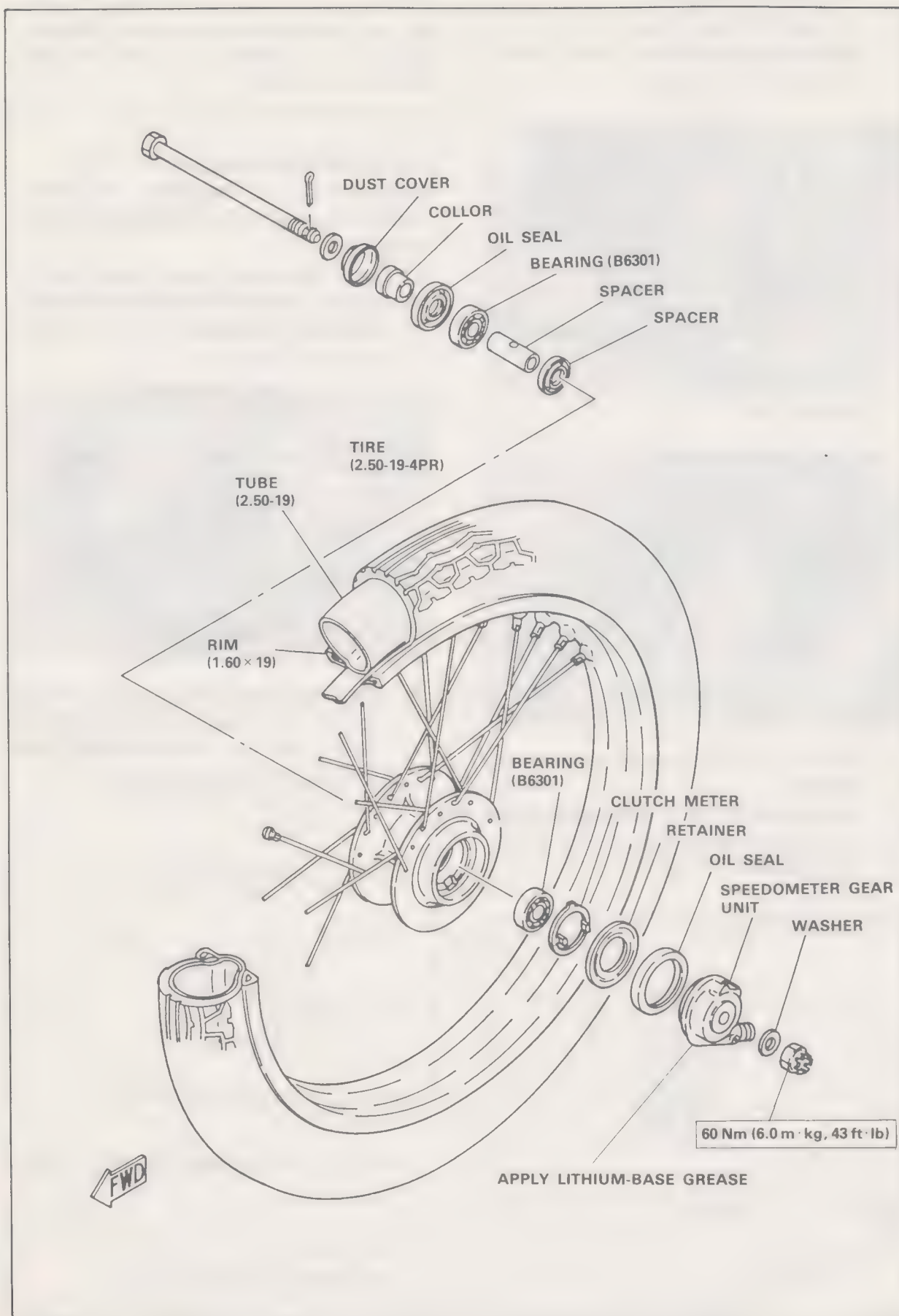
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FRONT WHEEL



A. Front Wheel Removal

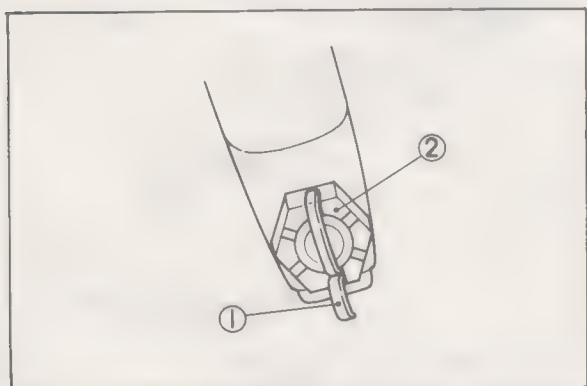
1. Elevate the front wheel by placing a suitable stand under the frame. Remove the speedometer cable.



1. Speedometer cable



2. Remove the cotter pin, washer and wheel axle nut.
3. Remove the axle shaft and wheel. In this case; make sure the motorcycle is properly supported.



1. Axle nut 2. Cotter pin

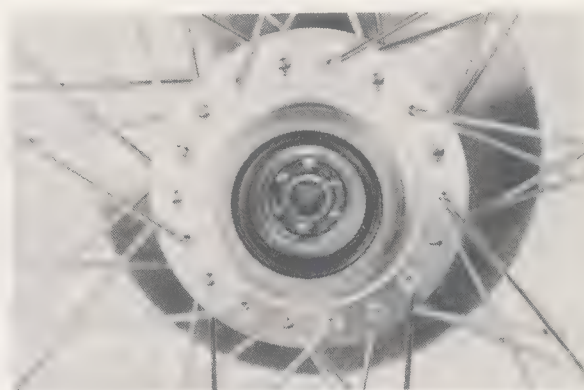
NOTE: _____

Do not depress the brake lever when the wheel is off the motorcycle as the brake pads will be forced to shut.

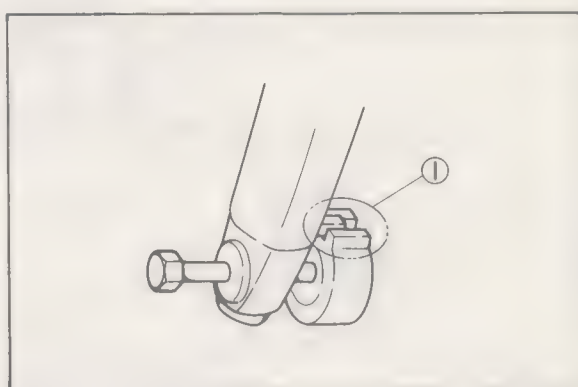
B. Front Wheel Installation

When installing the front wheel, reverse the removal procedure taking care of the following points:

1. Lightly grease the lips of front wheel oil seals and gear teeth of speedometer drive and driven gears. Use lightweight lithium-soap base grease.



2. Check for proper engagement of the boss on the outer fork tube with the locating slot on the speedometer gear unit housing (torque stopper).



1. Torque stopper

3. Tighten the axle nut and install a new cotter pin.

Axle nut torque:
60 Nm (6.0 m · kg, 43 ft · lb)

C. Front Axle

Remove any corrosion from the axle with emery cloth. Place the axle on a surface plate and check for bends. If bent, replace it.

Do not attempt to straighten a bent axle.

D. Front Wheel Inspection

1. Check for cracks, bends or warpage of wheels. If a wheel is deformed or cracked, it must be replaced.
2. Check wheel runout.
If deflection exceeds tolerance, check the wheel bearing or replace the wheel as required.

Rim runout limits:

Vertical: 2.0 mm (0.04 in)

Lateral: 2.0 mm (0.04 in)

3. Check wheel balance. Rotate the wheel lightly several times and observe the resting position. If the wheel is not statically balanced, replace as required.
4. After installing a tire, ride conservatively to allow the tire to seat itself on the rim properly. Failure to allow proper seating may cause tire failure resulting in damage to the motorcycle and injury to the rider.
5. After repairing or replacing a tire, check to be sure the valve stem locknut is securely fastened. If not, torque it as specified.

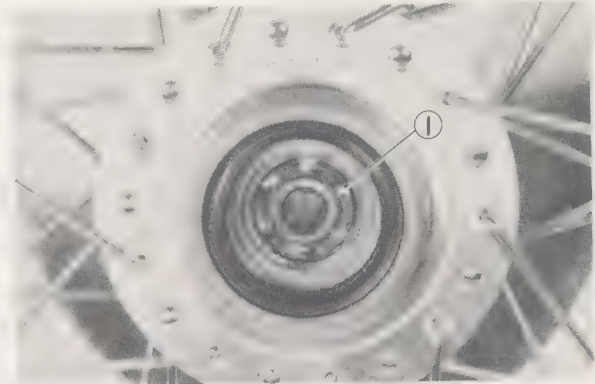
Tightening torque:

2 Nm (0.2 m·kg, 1.4 ft·lb)

E. Replacing Wheel Bearings

If the bearings allow play in the wheel hub or if wheel does not turn smoothly, replace the bearings as follows:

1. First clean the outside of the wheel hub.



1. Wheel bearing

2. Drive the bearing out by pushing the spacer aside (the spacer "floats" between the bearings) and tapping around the perimeter of the bearing inner race with a soft metal drift pin and hammer. Both bearings can be removed in this manner.

WARNING:

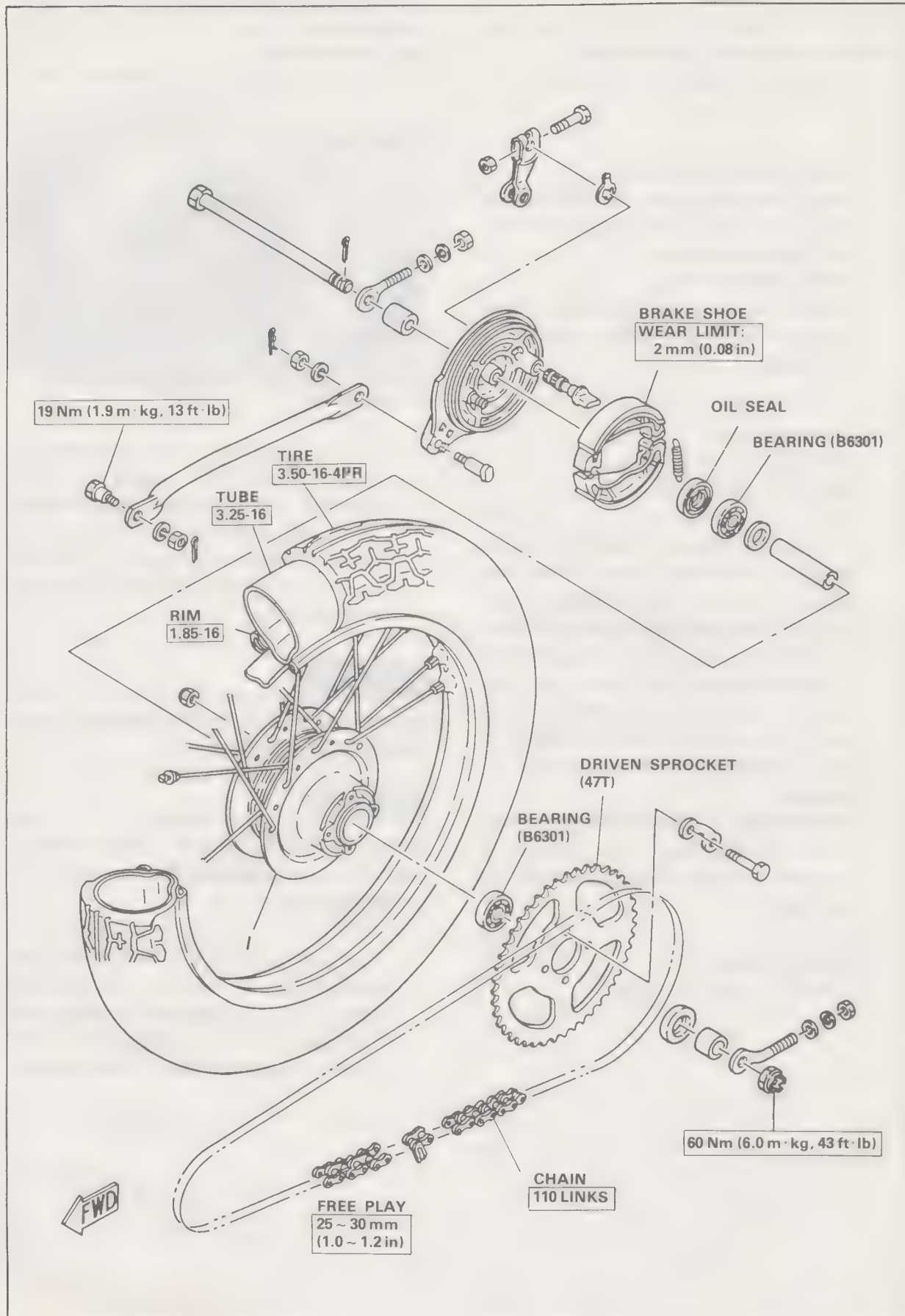
Eye protection is recommended when using striking tools.

CAUTION:

Do not strike the center race or balls of the bearing. Contact should be made only with the outer race.

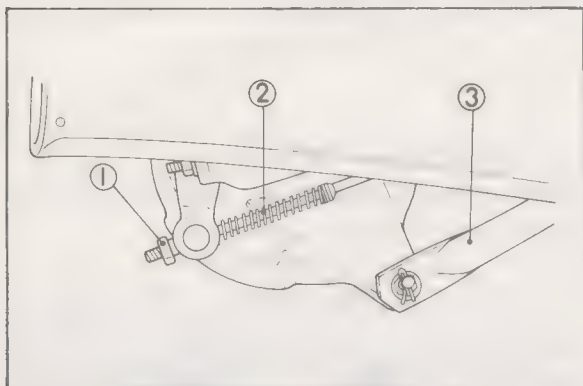
3. To install the wheel bearing, reverse the above sequence. Be sure to grease the bearing before installation. Use a socket that matches the outside race of the bearing as a tool to drive in the bearing.

REAR WHEEL



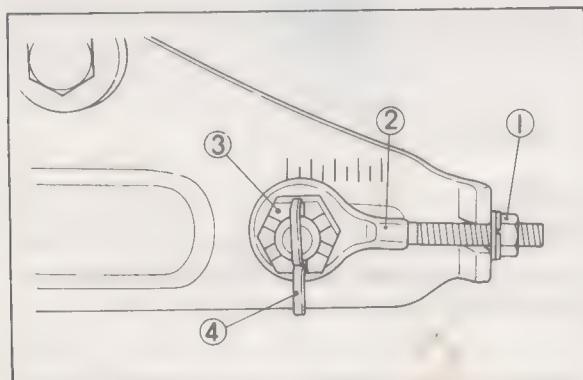
A. Rear Wheel Removal

1. Remove the tension bar and the brake rod from the brake shoe plate. The tension bar can be removed by removing the cotter pin and nut from the tension bar bolt. The brake rod can be removed by removing the adjust nut.



1. Adjuster 2. Brake rod 3. Tension bar

2. Loosen the adjuster nuts of the right and left chain pullers.



1. Adjust nut 2. Chain puller 3. Axle nut 4. Cotter pin

3. Remove the cotter pin from the wheel axle and remove the rear wheel axle nut.
4. Remove the rear wheel assembly from the motorcycle.

B. Rear Wheel Installation

When installing the rear wheel, reverse the removal procedure taking care of the following points:

1. Lightly grease lips of rear wheel oil seals and bearings.

2. Make sure the rear wheel axle nut is properly torqued.

TIGHTENING TORQUE:

60 Nm (6.0 m · kg, 43 ft · lb)

3. Adjust the drive chain tension.
4. Adjust the brake pedal and brake light switch.
5. Always use a new cotter pin.

C. Rear Axle

See section "Front wheel", paragraph "Front axle".

D. Replacing Wheel Bearings

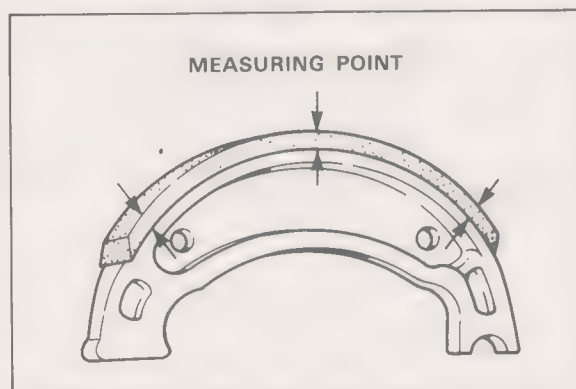
See front wheel section, paragraph "Replacing wheel bearings".

E. Rear Wheel Inspection

See front wheel section, paragraph "Front wheel inspection".

F. Checking Brake Shoe Wear

1. Check the brake linings for damage and wear. If the thickness is less than the specified value, replace the brake shoe as a set.



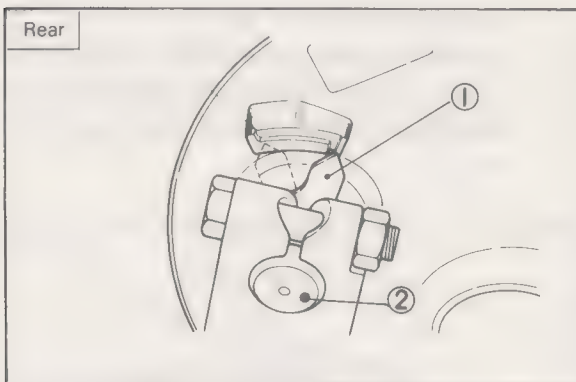
Wear limit: 2 mm (0.08 in)

2. Remove any glazed areas from brake shoes using coarse sand paper.
3. Adjustment and brake shoe replacement
 - a. Camshaft lever adjustment
If the free play adjustment of the brake pedal is impossible with the adjuster and at the same time, if the indicator is still before the limit mark, make an adjustment by turning the camshaft lever one tooth. Make sure the notch on the indicator plate is aligned with the punch mark on the camshaft. If not, bring them to align.

CAUTION:

Do not turn the camshaft lever more than one tooth at one time.

- b. When the indicator mark is lined up with the limit mark, replace the brake shoe. After replacement, be sure the camshaft lever position is within the specified range in reference to the camshaft and notch on the indicator is aligned with the punch mark on the camshaft.



1. Indicator plate 2. Punch mark

G. Brake Drum

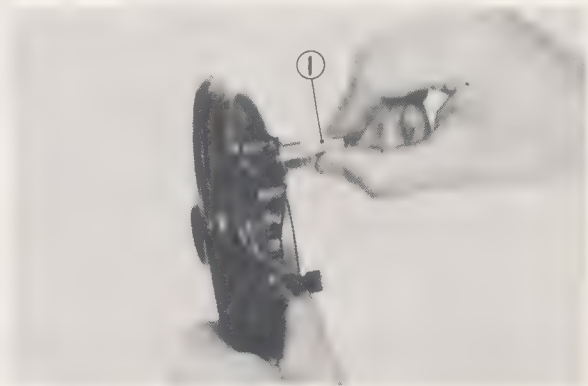
Oil or scratches on the inner surface or the brake drum will impair braking performance or result in abnormal noises.

Remove oil by wiping with a rag soaked in lacquer thinner or solvent.

Remove scratches by lightly and evenly polishing with emery cloth.

H. Brake Shoe Plate

Remove the camshaft and grease. If the cam face is worn, replace.



1. Camshaft

NOTE:

Before removing the cam lever, put a match mark on the cam lever and camshaft to indicate their positions for easy assembly.

FRONT DISC BRAKE

CAUTION:

Disc brake components rarely require disassembly. Do not disassemble components unless absolutely necessary. If any hydraulic connection in the system is opened, the entire system should be disassembled, drained, cleaned and then properly filled and bled upon reassembly. Do not use solvents on brake internal components. Solvents will cause seals to swell and distort. Use only clean brake fluid for cleaning. Use care with brake fluid. Brake fluid is injurious to eyes and will damage painted surfaces.

2. Install the new brake pads. Replace the following parts if pad replacement is required:

- a. Retaining spring
- b. Pads.
- c. Retaining pin
- d. Circlip

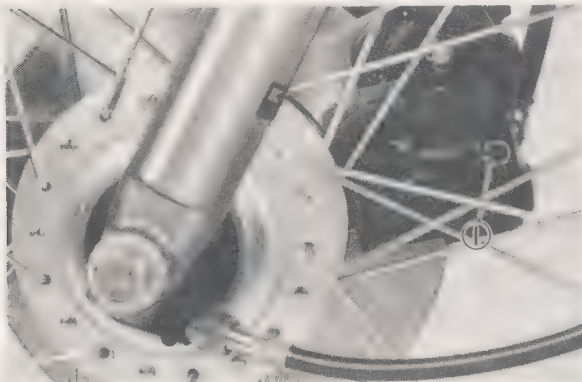
NOTE:

Replace the pads as a set if either is found to be worn to the wear limit.

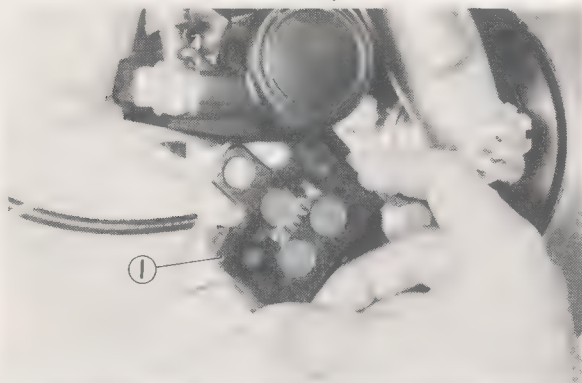
A. Caliper Pad Replacement

It is not necessary to disassembly the brake calipers and brake fluid hoses to replace the brake pads.

1. Remove the retaining circlip and retaining pin. Then pull out the pads.

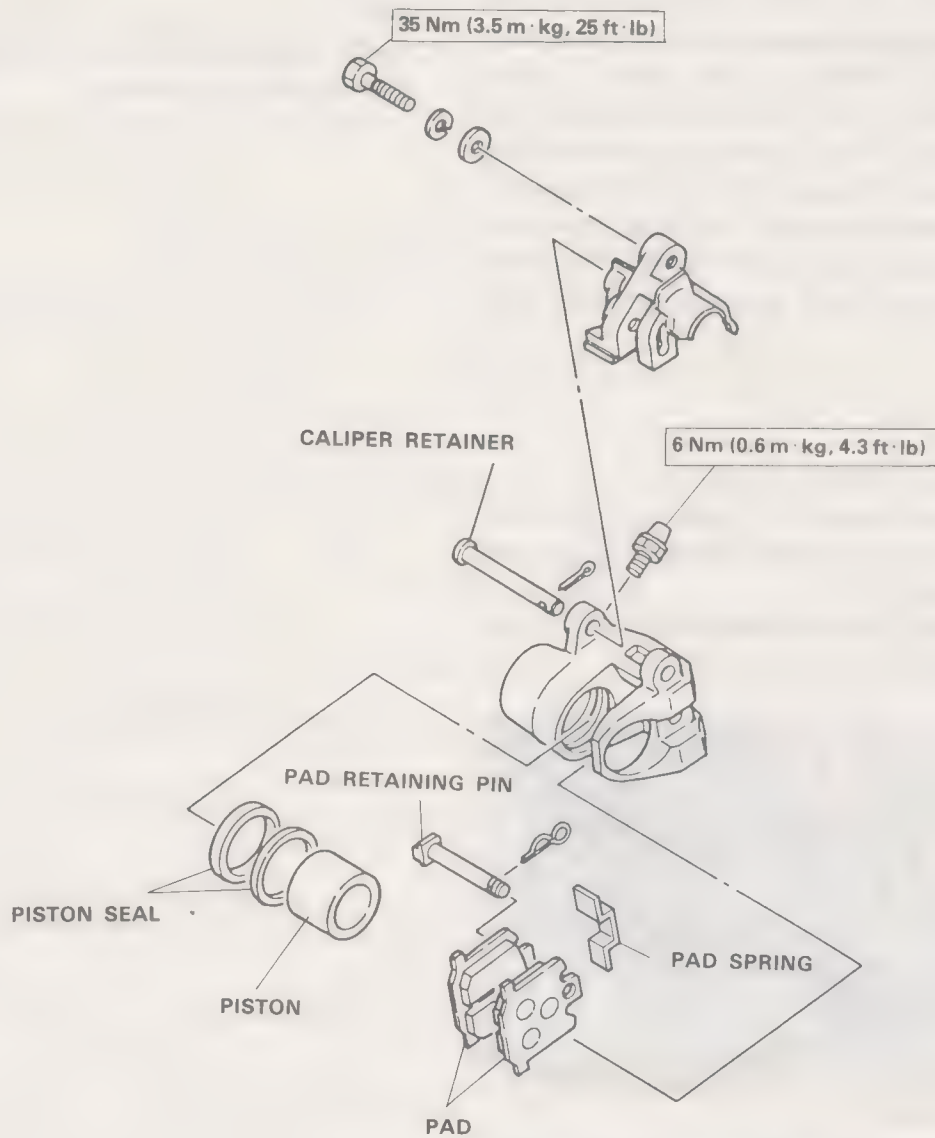


1. Retaining circlip



1. Brake pad

B. Caliper Disassembly



1. Remove the caliper brake hose. Allow the caliper assembly to drain into a container.
2. Place the open hose end into the container and pump the old fluid out of the master cylinder.
3. Remove the brake caliper holding bolt, circlip, retaining pin, and pads.



4. Carefully force the piston out of the caliper cylinder with compressed air. Never try to pry out the piston.

WARNING:

Cover the piston with a rag. Use care so that the piston does not cause injury as it is expelled from the cylinder.

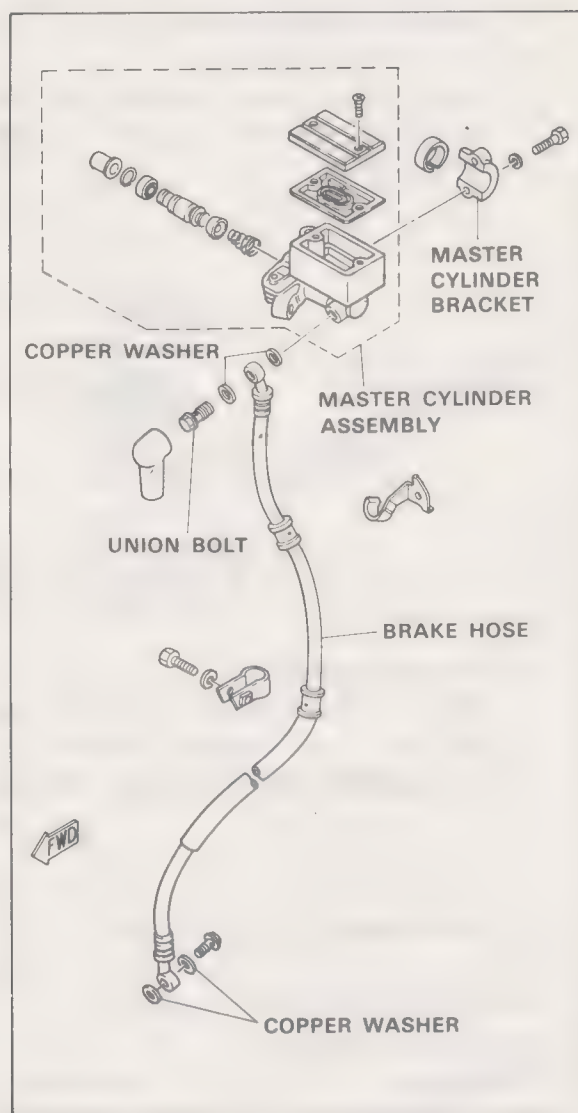


5. Remove the piston seals.



1. Piston seal

C. Master Cylinder Disassembly

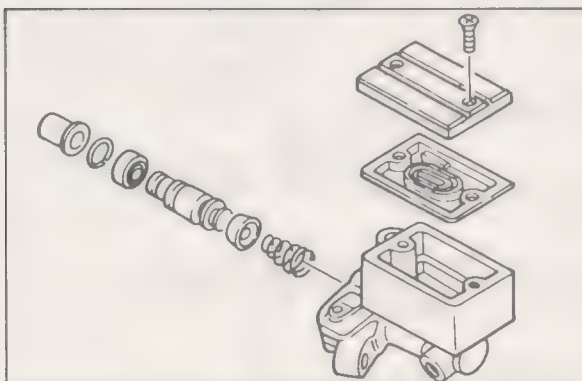


1. Remove the brake lever and spring.



1. Brake switch

2. Remove the brake light switch.
3. Remove the brake hose.
4. Remove the master cylinder from the handlebars. Remove the cup and drain the brake fluid.



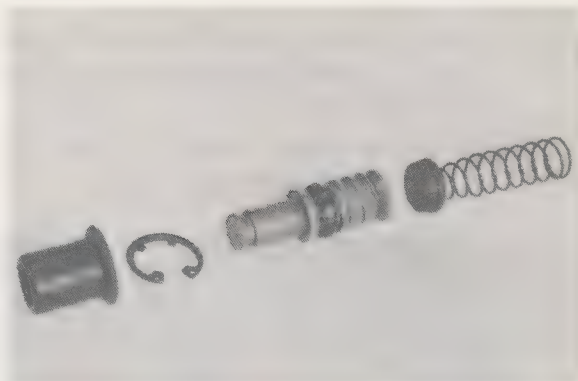
5. Remove the snap ring.
Remove the master cylinder cup assembly. Note that the cylinder cups are installed with the larger diameter (lips) inserted first.

D. Brake Inspection and Repair

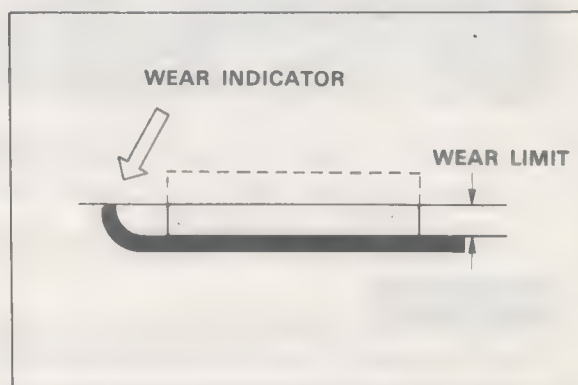
Recommended Brake Component Replacement Schedule:

Brake pads As required
Piston seal, dust seal Every two years
Brake hoses Every four years
Brake fluid Replace only when
brakes are disassembled.

1. Replace the caliper piston if it is scratched.



2. Replace any brake pad worn beyond limits. Replace the brake pads as a set.

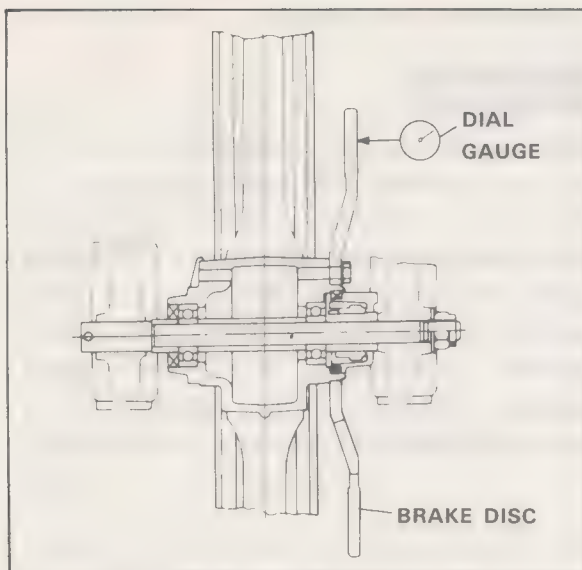


Wear limit: 0.8 mm (0.03 in)

See Caliper Pad Replacement procedure for parts to be replaced when pads are replaced.

3. Replace the piston, piston seal, and the dust seal if damaged. Replace the seals every two years.
4. Inspect the master cylinder body; replace if scratched. Clean all the passages with new brake fluid.
5. Inspect the brake hoses. Replace the hoses every four years or immediately if cracked, frayed, or damaged.
6. Check for wear and deflection of the disc.

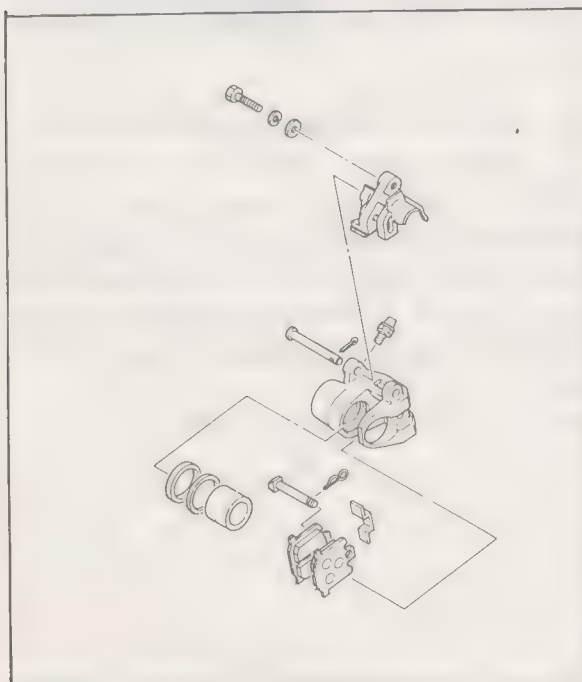
If the disc is worn beyond minimum thickness or deflection exceeds the specified amount, replace the disc.



Maximum deflection:
0.15 mm (0.006 in)
Minimum disc thickness:
3.5 mm (0.14 in)

E. Brake Assembly Caliper

All internal parts should be cleaned in new brake fluid only. Internal parts should be lubricated with brake fluid when installed. Replace the piston seals whenever a caliper is disassembled:



1. Install the piston seal and the piston.
2. Install the pads.
3. Install the caliper assembly on the front fork. Torque the bolt to specification.

TIGHTENING TORQUE:
35 Nm (3.5 m · kg, 25 ft · lb)

4. Attach the brake hoses.

TIGHTENING TORQUE:
26 Nm (2.6 m · kg, 19 ft · lb)

NOTE: _____
If copper washers are damaged, replace it.

5. If the brake disc has been removed from the hub or is loose, tighten the bolts. Use new lock washers, and bend the lock tabs against a bolt flat after the bolts are torqued to specification.

TIGHTENING TORQUE:
23 Nm (2.3 m · kg, 17 ft · lb)



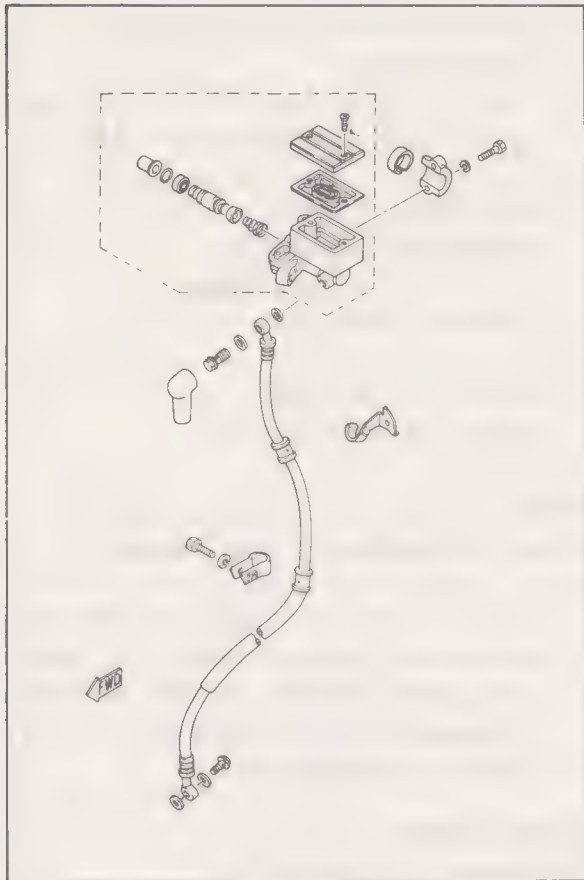
1. Lock washer

6. Reassemble the master cylinder as shown in the illustration.

TIGHTENING TORQUE:
All brake union bolts:
26 Nm (2.6 m · kg, 19 ft · lb)

7. Install the master cylinder assembly to the handlebars. Torque the bolts to specification.

TIGHTENING TORQUE:
10 Nm (1.0 m · kg, 7.2 ft · lb)

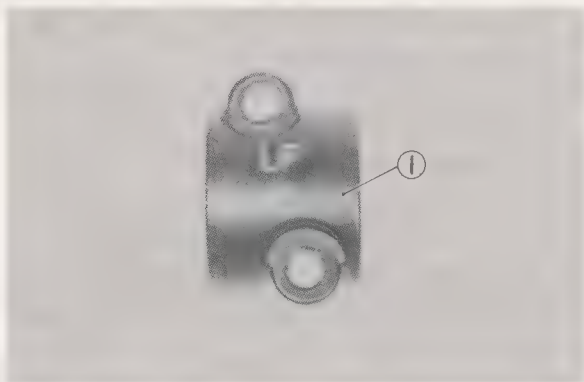


NOTE:

When installing the master-cylinder-cup assembly, note that the cylinder cups are installed with the larger diameter (lips) inserted first.

NOTE:

The master cylinder bracket should be installed with the "UP" mark unit on top.



1. Master cylinder bracket

F. Bleeding the Brakes

WARNING:

If the brake system is disassembled or if any brake hose has been loosened or removed, the brake system must be bled to remove air from the brake fluid. If the brake fluid level is very low or brake operation is incorrect, bleed the brake system. Failure to bleed the brake system properly can result in a dangerous loss of braking performance.

1. Slowly apply the brake lever several times. Pull in the lever. Hold the lever in the "on" position. Loosen the bleed screw. Allow the lever to travel slowly toward its limit. When the limit is reached, tighten the bleed screw. Then release the lever.



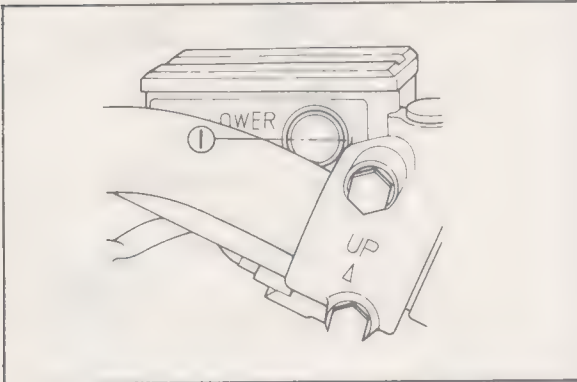
2. Repeat the above procedure until all air bubbles are removed from the system.

NOTE:

If bleeding is difficult, it may be necessary to let the brake fluid system stabilize for a few hours. Repeat the bleeding procedure when the tiny bubbles in the system have settled out.

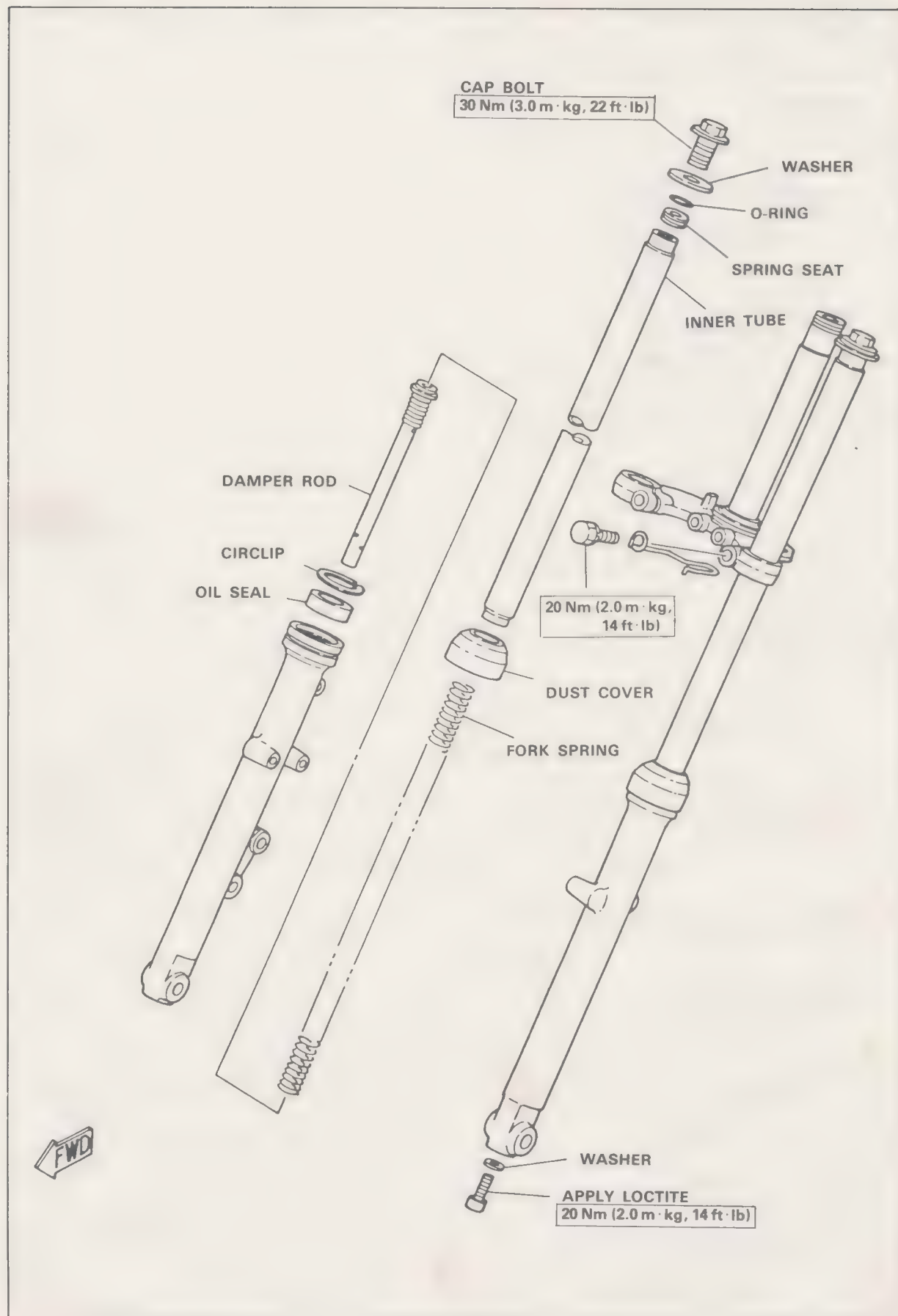
Bleed screw tightening torque:
6 Nm (0.6 m · kg, 4 ft · lb)

3. Add brake fluid to the level line on the reservoir.



1. Lower level

FRONT FORK



A. Removal and Disassembly

WARNING:

Securely support the motorcycle so there is no danger of it falling over.

1. Disconnect the speedometer cable. Remove the front fender, caliper assembly and front wheel from the front forks.
2. Remove the cap bolt and washer from the top of each fork.



1. Cap bolt 2. O-ring

3. Loosen the pinch bolts on the steering stem and remove the forks.



1. Pinch bolt



4. Remove the fork spring, spring seat, gasket, and drain off the fork oil.

WARNING:

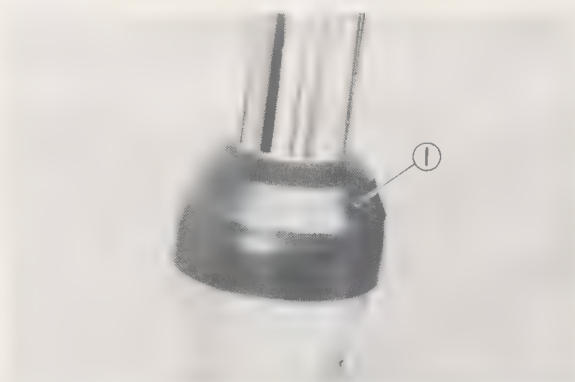
Do not allow oil to contact the disc brake components. If any oil should contact the brake components it must be removed before the motorcycle is operated. Oil will cause diminished braking capacity and will damage the rubber components of the brake assembly.

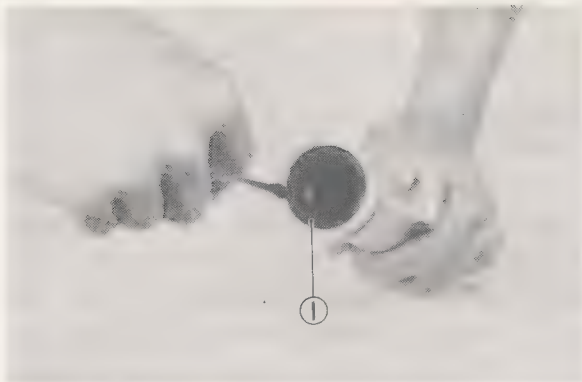
5. Remove the cylinder securing bolt from the bottom of the fork assembly. Hold the inner tube with the front fork cylinder holder. Remove the damper rod assembly and inner fork tube.



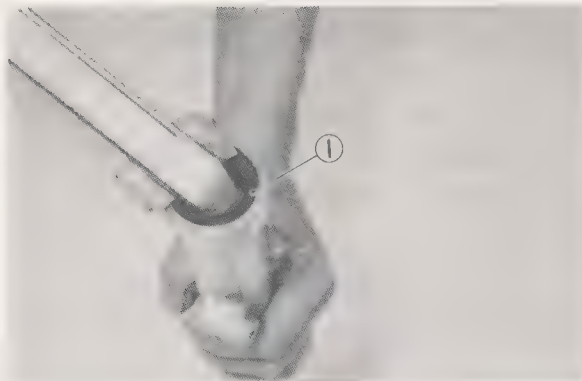
1. Front fork cylinder holder

6. To remove the fork seal, pull off the dust cover. Remove the retaining clip from the outer tube. Pry out the oil seal, being very careful to not damage the fork tube surfaces.





1. Retaining clip



1. Oil seal

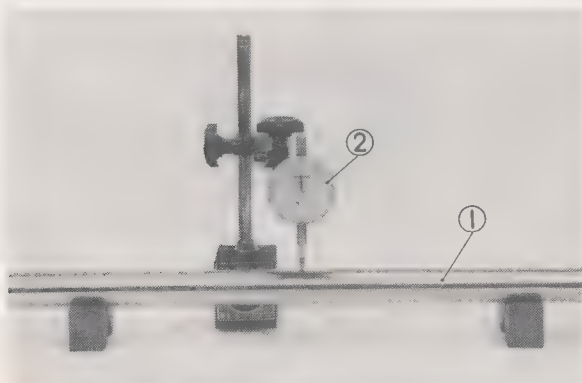
B. Inspection

1. Examine the fork inner tube for scratches and straightness. If the inner tube is scratched severely or bent, it should be replaced.

WARNING:

Do not attempt to straighten an inner tube, since this may weaken the part dangerously.

Runout limit: 0.2 mm (0.008 in)

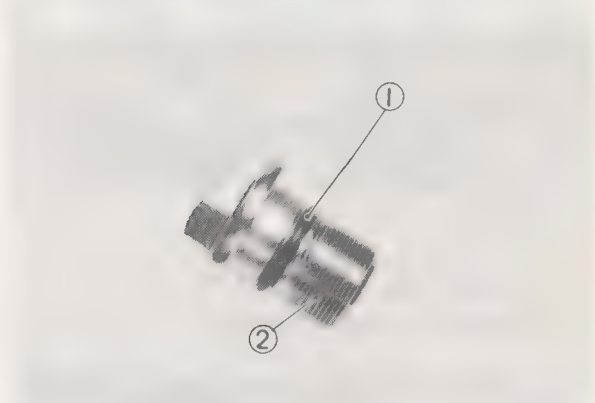


1. Inner tube 2. Dial gauge

2. Check the seal outer seat. If leakage is from this area, replace the seal. If this does not cure the leakage, replace the outer tube.
3. Check the outer tube for dents. If any dent causes the inner tube to "hang up" during operation, the outer tube should be replaced.
4. Check the free length of the springs.

Fork spring free length:
518.5 mm (20.41 in)
Fork spring free length limit:
51.5 mm (20.28 in)

5. Check the O-ring for damage. If damaged, replace the gasket.



1. O-ring 2. Cap bolt

C. Assembly

1. Make sure all components are clean before assembly. Always install a new fork seal. Do not re-use a seal.
2. Apply oil to the fork seal, and install the seal by pressing it in with a large socket. Install the retaining clip.
3. Install the inner tube into the outer tube.
4. Install the damper rod assembly into the inner fork tube. Hold the damper rod with the front fork cylinder holder.
5. Put the taper spindle on the damper rod.
6. Hold the inner fork tube, and carefully install the outer fork tube over the taper spindle.
7. Apply Loctite® (red) to the cylinder securing bolt, and install the bolt and a copper washer into the outer fork tube. Torque the bolt to specification.

TIGHTENING TORQUE:
20 Nm (2.0 m·kg, 14 ft·lb)

8. Install the fork into the brackets. Make the top of the inner fork tube level with the top of the steering crown.



1. Inner tube 2. Steering crown

9. Tighten the pinch bolt at the under bracket. Torque the bolt to specification.

TIGHTENING TORQUE:
20 Nm (2.0 m·kg, 14 ft·lb)

10. Pour specified amount of oil into the inner tube.

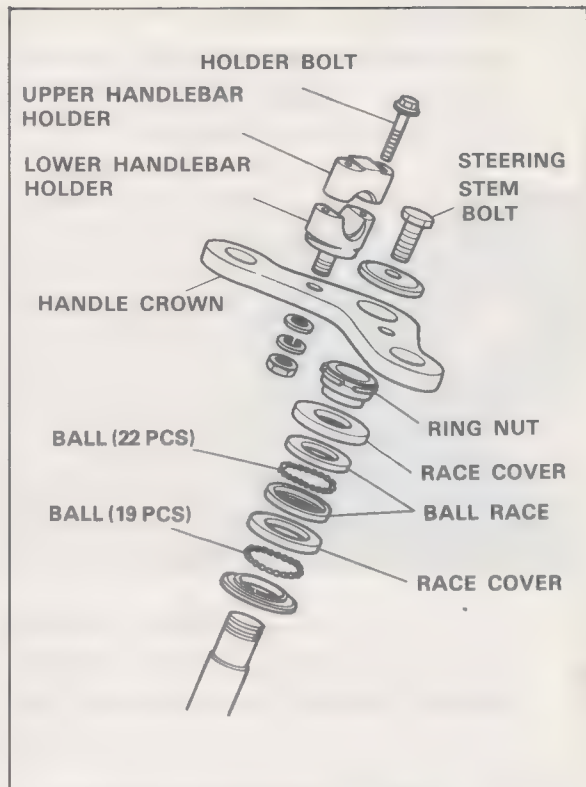
Front fork oil capacity:
Right: 87 cm³ (3.06 Imp oz, 2.94 US oz)
Left: 117 cm³ (4.12 Imp oz, 3.96 US oz)

11. Install the fork spring, washer, and cap bolt with a new O-ring into the inner fork tube.
Torque the cap bolt to specification.

TIGHTENING TORQUE:
48 Nm (4.8 m·kg, 35 ft·lb)

12. To install the brake caliper, front fender, and front wheel, reverse the removal procedure.

STEERING HEAD

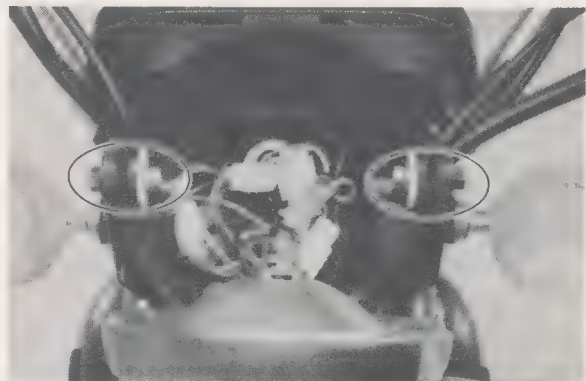


A. Adjustment

Refer to "ASSEMBLY" for steering head adjustment procedures.

B. Removal

1. Remove the headlight unit assembly.
2. Disconnect all wiring connectors in the headlight body. Remove the headlight body.



3. Remove the upper handle holders and handlebar.
4. Disconnect the speedometer cable and tachometer cable, and remove the meter from the meter bracket.



5. Remove the steering stem bolt and remove the steering crown, headlight brackets washers, rubber washers and emblem.



6. Remove the ring nut with the ring nut wrench.



1. Ring nut wrench

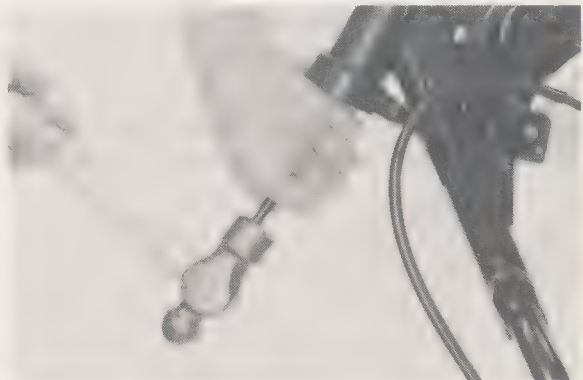
7. Support the steering stem, and remove the bearing race cover, bearing race, and all of the balls from the upper bearing.



8. Slowly remove the steering stem, and remove the all of the balls from the lower bearing.



9. Remove the races from the head pipe using a drift pinch and hammer as shown. Work the race out gradually by tapping lightly around its complete backside diameter.



WARNING:

Eye protection is recommended when using striking tools.

10. Remove the bearing race from the lower bracket by tapping around its backside diameter with a drift punch and hammer.

**WARNING:**

Eye protection is recommended when using striking tools.

C. Inspection

1. Examine all the balls for pits or partial flatness. If any one is found defective, the entire set (including both races) should be replaced. If either race is pitted, shows rust spots, or is damaged in any way, replace both races and all balls.

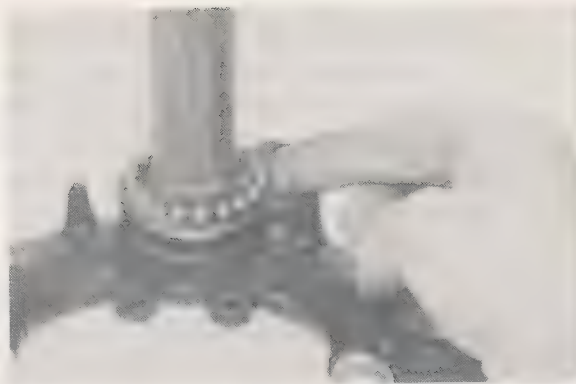
D. Installation

1. If the pressed-in races have been removed, tap in new races.

WARNING:

Eye protection is recommended when using striking tools.

2. Grease the lower ball race of the bottom assembly and arrange the balls around it. Then apply more grease.



3. Grease the upper ball race of the upper assembly and arrange the balls around it. Then apply more grease and set the top race into place.

**NOTE:**

Use medium-weight wheel bearing grease of quality manufacturer, preferably waterproof.

4. Carefully slip the under bracket stem up into the steering head. Hold the top bearing assembly in place so the stem does not knock any balls out of position.

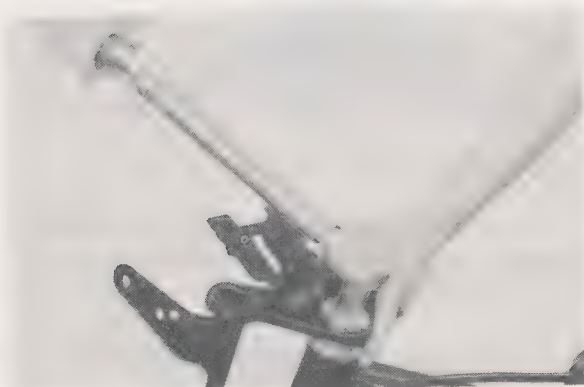


5. Set the upper bearing cover on and install the ring nut. Tighten the ring nut so all free play is taken up, but so the bracket can still pivot freely from lock to lock. Recheck for free play after the entire fork unit has been installed.



1. Ring nut wrench

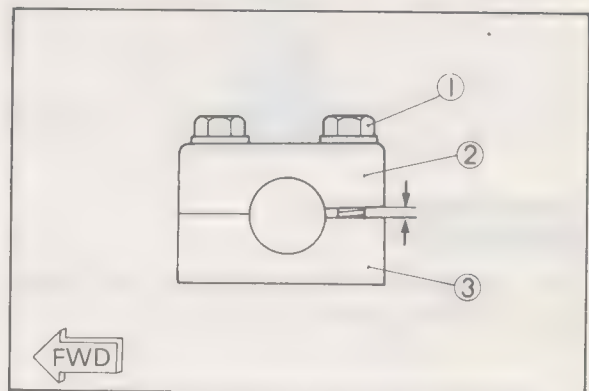
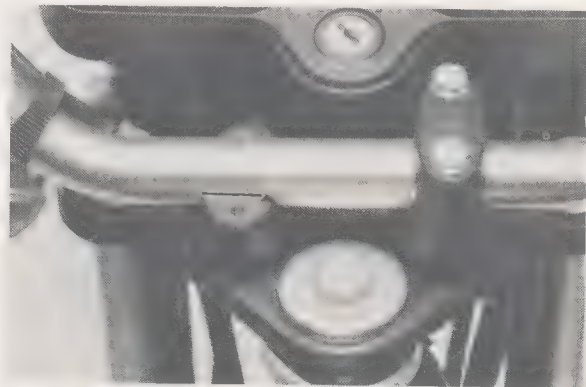
6. Install the handle crown. Tighten the steering stem bolt. Torque to specifications.



Steering stem bolt:
40 Nm (4.0 m · kg, 29 ft · lb)

7. Install the meter assembly onto the meter bracket. Connect the meter cables.
8. Install the handlebars in the following manners.
 - a. Install the handlebars onto the lower holders. Then align the handlebars identification mark with top end face of the lower holder.
 - b. First tighten the bolts on the front side of the handlebar holder and then tighten the bolts on the rear side.

TIGHTENING TORQUE:
13 Nm (1.3 m · kg, 9.4 ft · lb)



1. Handlebar holder bolt 2. Upper holder 3. Lower holder

9. Continue assembly; reverses the disassembly procedure.
10. When assembly is complete, check the steering stem by turning it from lock to lock. If there is any binding or looseness, readjust the tightness of the steering stem.

TIGHTENING TORQUE:

Under bracket pinch bolt:

20 Nm (2.0 m · kg, 14 ft · lb)

Cap bolt:

48 Nm (4.8 m · kg, 35 ft · lb)

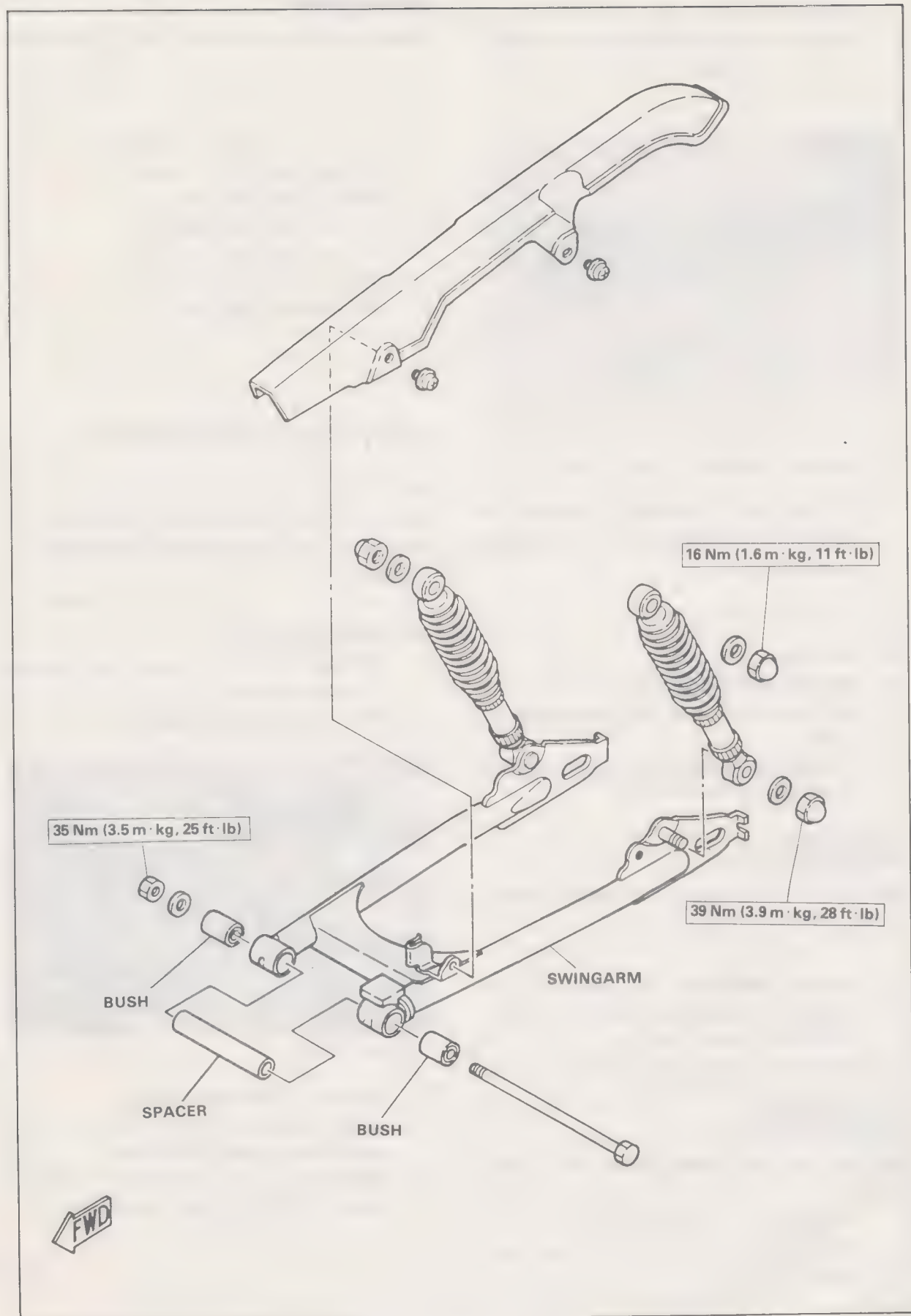
Brake caliper:

35 Nm (3.5 m · kg, 25 ft · lb)

Front axle:

60 Nm (6.0 m · kg, 43 ft · lb)

SWINGARM



A. Inspection

1. With rear wheel and shock absorber removed, grasp the ends of the arm and move from right to left to check for free play.



Swing arm free play: 1 mm (0.04 in)

2. If free play is excessive, remove the swingarm and replace the swingarm bushings.

B. Removal

1. Remove nut on swingarm pivot shaft and tap out bolt with a long aluminum or brass rod.
2. Tap out old bushes from each side of pivot using the long rod.

CAUTION:

Eye protection is recommended when using striking tools.

3. Before assembling the swingarm and relevant parts, apply grease on the pivot shaft and inside of bush.
4. Install new bushes using a press.

CAUTION:

Do not tap on a bush. Press in a new bush.

5. For installation, reverse the removal procedure.

WARNING:

Always use a new cotter pin on the axle nut.

Pivot shaft tightening torque:

30 Nm (3.0 m · kg, 20 ft · lb)

Frame & shock absorber:

15 Nm (1.5 m · kg, 11 ft · lb)

Rear arm & shock absorber:

39 Nm (3.9 m · kg, 28 ft · lb)

DRIVE CHAIN AND SPROCKETS

NOTE

Please refer to Maintenance intervals and Lubrication intervals charts for additional information.

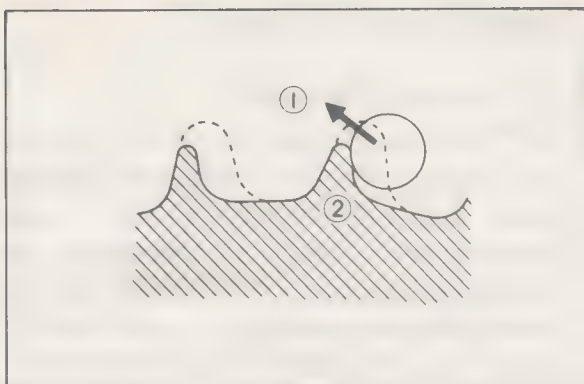
A. Drive Sprocket

1. Remove the change pedal and left-side crankcase cover.
2. Remove the sprocket circlip.

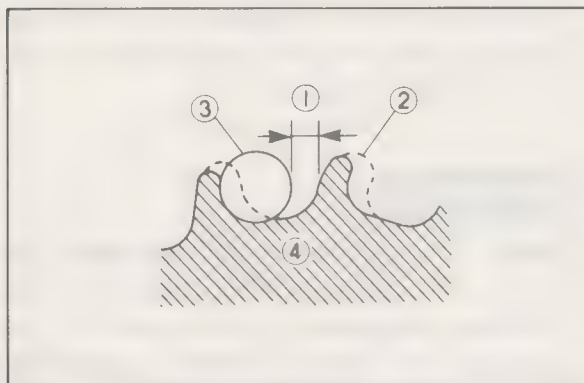


1. Sprocket circlip

3. Remove the drive sprocket.
4. Check sprocket wear. Replace if tooth width has decreased as shown.
5. Replace if tooth wear shows a pattern resembling that in the illustration.



1. Slip off 2. Bend teeth



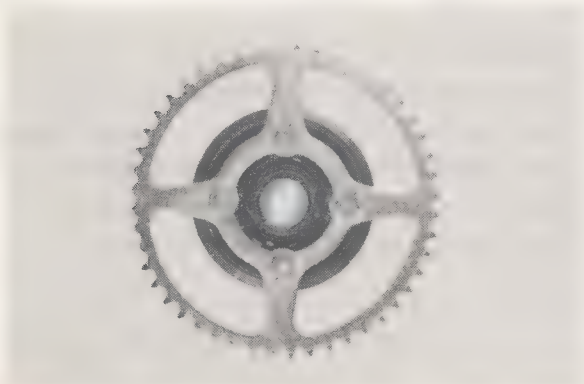
1. 1/4 tooth 2. Correct 3. Roller 4. Sprocket

6. During reassembly, make sure a new circlip is properly engaged on the drive shaft groove.

B. Driven Sprocket

With the rear wheel assembly and the brake shoe plate removed, proceed as follows:

1. Using a blunt chisel, flatten the securing bolt lock tabs. Remove the lock washers and sprocket securing bolts.



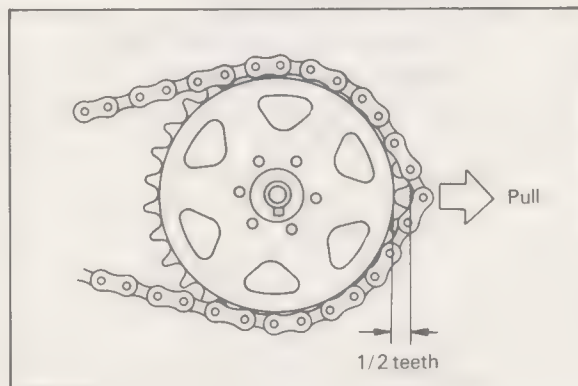
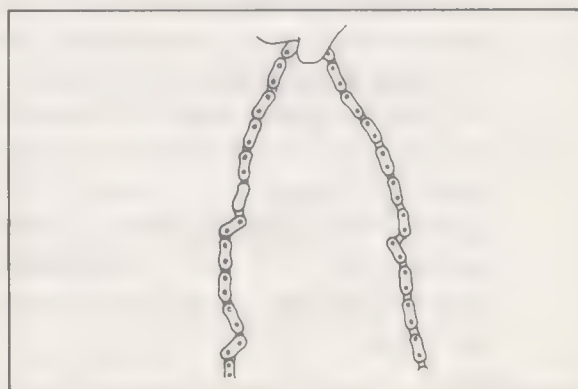
1. Lock washer

2. Check sprocket wear per procedures for the drive sprocket.
3. Check the sprocket to see that it runs smoothly. If bent, replace.
4. During reassembly, make sure that the sprocket and coupling are clean. Tighten the securing bolts in a crisscross pattern. Apply a grease and bend the tabs of the lock washers fully against the securing bolt flats.

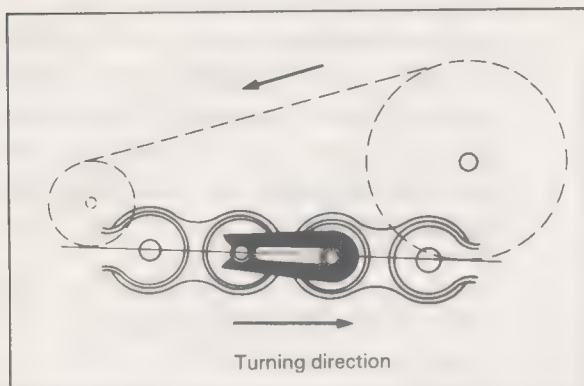
Driven sprocket securing bolt torque:
20 Nm (2.0 m · kg, 14 ft · lb)

C. Chain Inspection

1. If the chain stays bent or kinked after cleaning and lubrication, or if the chain can be pulled away from the sprocket more than 1/2 the length of a sprocket tooth, the chain and sprockets should be replaced as a set.



2. During reassembly, the master link clip must be installed with the rounded end facing the direction of travel.



D. Chain Maintenance

The chain should be lubricated according to the recommendations given in the Maintenance and Lubrication intervals charts.

More often if possible. Preferable after every use.

1. First, remove dirt and mud from the chain with a brush or cloth and then spray the lubricant between both rows of side plates and on all center rollers.
2. To clean the entire chain, first remove the chain from the motorcycle, dip it in solvent and clean out as much dirt as possible. Then take the chain out of the solvent and dry it. Immediately, lubricate the chain to prevent the formation of rust.

Recommended lubricant:

Yamaha chain and cable lube.
or SAE 10W30 motor oil

CABLES AND FITTINGS

A. Cable Maintenance

NOTE:

See Maintenance and Lubrication intervals charts for additional information. Cable maintenance is primarily concerned with preventing deterioration through rust and weathering and providing for proper lubrication to allow the cable to move freely within its housing. Cable removal is straight-forward and uncomplicated. Removal will not be discussed within this section. For details, see the individual maintenance section for which the cable is an integral part.

WARNING:

Cable routing is very important, for details of cable routing, see the cable routing diagrams at the end of the manual. Improperly routed, assembled or adjusted cables may render the vehicle unsafe for operation.

1. Remove the cable.
2. Check for free movement of cable within its housing. If movement is obstructed, check for fraying or kinking of cable strands. If damage is evident, replace the cable assembly.
3. To lubricate the cable, hold in a vertical position. Apply lubricant to the uppermost end of cable. Leave in a vertical position until lubricant appears at the bottom. Allow excess to drain and re-install.

NOTE:

Choice of lubricant depends upon conditions and preference. However, a semi-drying chain and cable lubricant will probably perform adequately under most conditions.

B. Throttle Maintenance

1. Remove the panhead screws from the throttle housing assembly and separate two halves of housing.



2. Disconnect the cable end from the throttle grip assembly and remove the grip assembly.



3. Wash all parts in mild solvent and check contact surfaces for burrs or other damage. (Also clean and inspect the right-hand end of handlebar.)
4. Lubricate contact surfaces with light coat of lithium soap base grease and reassemble.

NOTE: _____

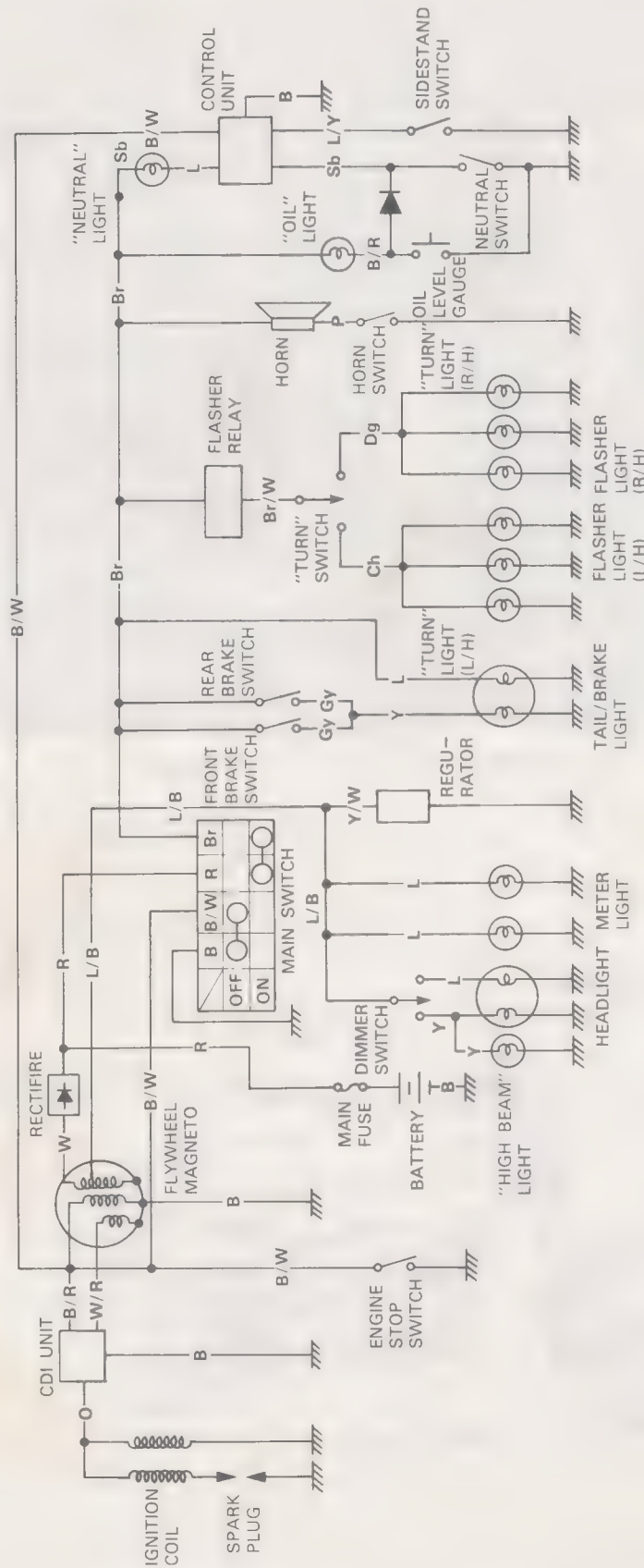
Tighten housing screws evenly to maintain an even gap between the two halves.

5. Check for smooth throttle operation and quick spring return when released and make certain that the housing does not rotate on the handlebar.

CHAPTER 6. ELECTRICAL

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RX50K WIRING DIAGRAM



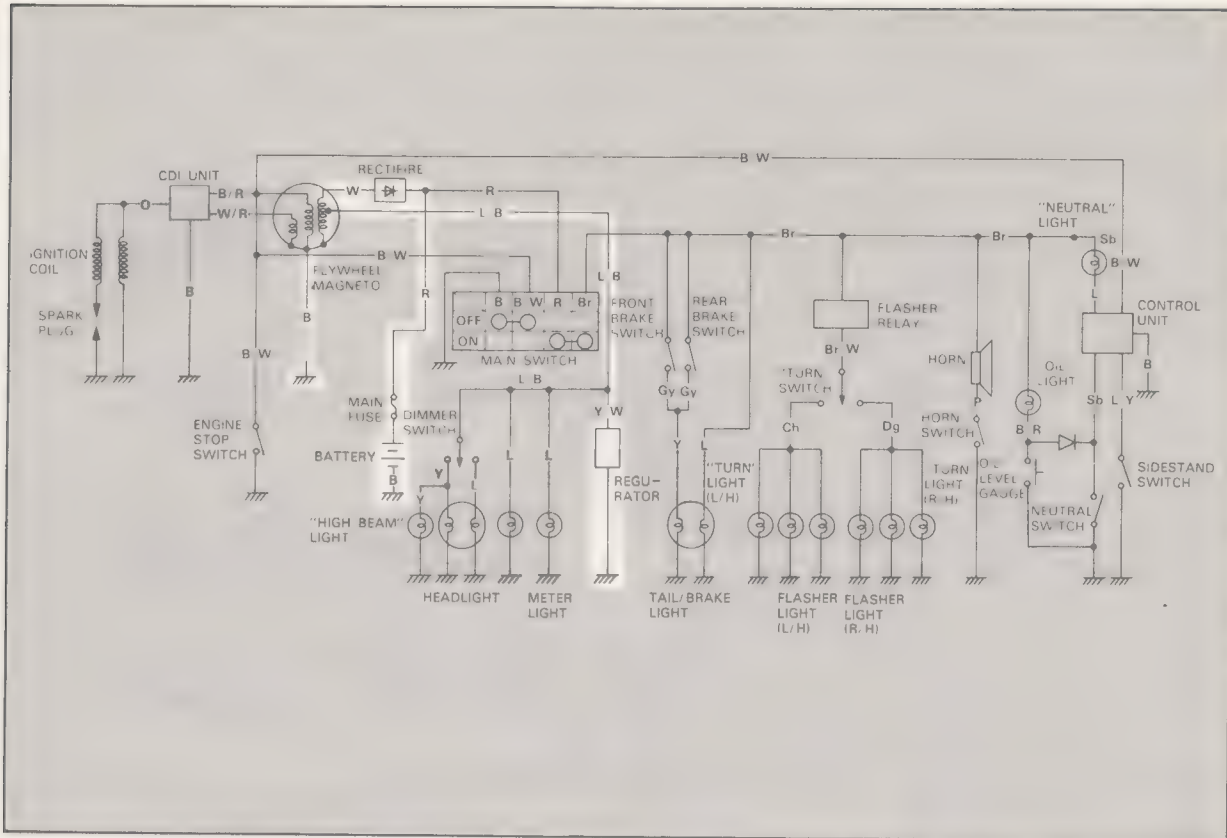
COLOR CODE

B Black
 O Orange
 R Red
 Y Yellow
 L Blue
 P Pink

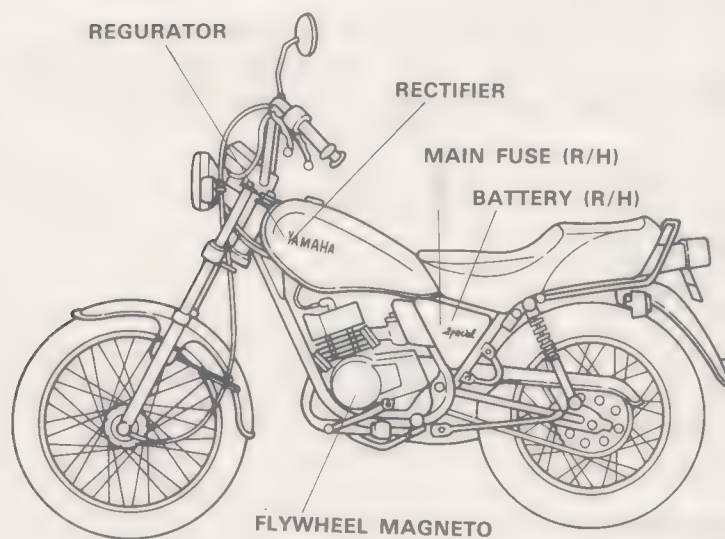
Br Brown
 Ch Chocolate
 Gy Gray
 Dg Dark green
 Sb Sky blue
 B/R Black/Red

W/R White/Red
 L/B Blue/Black
 B/W Black/White
 L/Y Blue/Yellow
 Br/W Brown/White
 Y/W Yellow/White

CHARGING SYSTEM



This circuit diagram shows the charging circuit in the wiring diagram.



A. Battery

If the battery shows the following defects, it should be replaced:

1. The battery voltage will not rise to a specific value or no bubbles rise in any cell even after many hours of charging.
2. Sulfation of one or more cells is indicated by the plates turning white or an accumulation of material in the bottom of the cell.
3. Specific gravity readings after a long, slow charge indicate a cell to be lower than any others.
4. Warpage or buckling of plates or insulators is evident.

WARNING:

Battery electrolyte is poisonous and dangerous, causing severe burns, etc. It contains sulfuric acid. Avoid contact with the skin, eyes, or clothing.

Antidote: EXTERNAL — Flush with water. INTERNAL — Drink large quantities of water or milk. Follow with milk of magnesia, beaten eggs, or vegetable oil. Call physician immediately.

Eyes: Flush with water for 15 minutes, and get prompt medical attention. Batteries produce explosive gases. Keep sparks, flame, cigarettes, etc. away. Ventilate when charging or using in an enclosed space. Always shield your eyes when working near batteries.

KEEP OUT OF REACH OF CHILDREN.

The service life of a battery is usually two to three year. Lack of care, as described below, will shorten the life of the battery.

- Negligence in keeping battery topped off with distilled water.
- Battery left discharged.
- Over-charging with heavy charge.
- Freezing
- Filling with tap water or sulfuric acid containing impurities.
- Improper charging voltage or current on new battery.

if the motorcycle is not to be used for a long time, remove the battery and have it stored. The following instructions should be observed:

1. Recharge the battery periodically.
2. Store the battery in a cool, dry place.
3. Recharge the battery before reinstallation.

Battery	6N4-2A/6V 4AH
Electrolyte	Specific gravity: 1.260
Initial charging current	0.4 amp for 10 hours (new battery)
Recharging current	10 hours (or until specific gravity reaches 1.260)
Refill fluid	Distilled water (to maximum level line)
Refill period	Check once per month (or more often, as required)

B. Charging Output Test

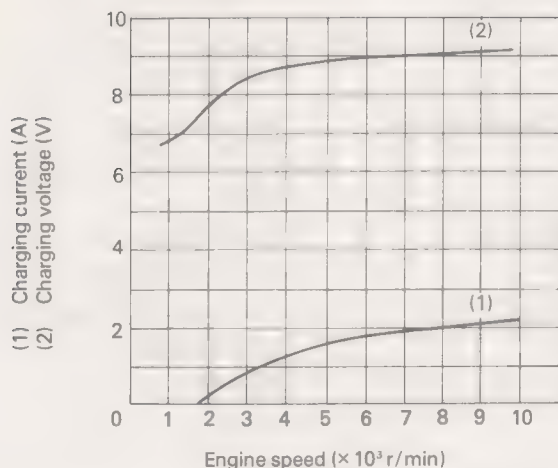
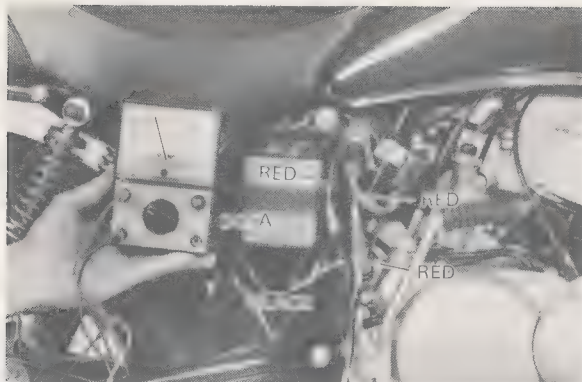
Voltage and charging current test

1. Disconnect the battery red (+) lead.
2. Connect D.C. voltmeter or ammeter (or Yamaha Pocket Tester) as shown.

NOTE:

The battery should be fully charged.





0.9 A or more at 4,100 r/min
 2.0 ± 0.5 A at 8,000 r/min
 8.5 V at 3,000 r/min

- If the indicated voltage and charging current cannot be reached, check all connections. If the connections are all good, check the charging coil, and rectifier.

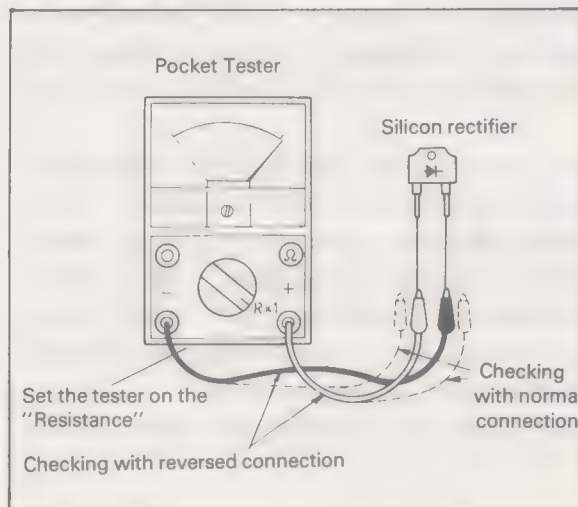
C. Charging Coil Resistance

- Remove the left-side cover.
- Disconnect the charging coil leads from the flywheel magneto.
- Check the resistance of the charge coil windings with the pocket tester. If the resistance is not within specification, replace the charge coil assembly.

Charge coil resistance:
 $0.3\Omega \pm 20\%$ at 20°C (68°F)
 (WHITE — BLACK)

D. Checking Silicon Rectifier

- Check with normal connections using Yamaha Pocket Tester:
 Connect the tester's red lead (+) to the silicon rectifier's red lead, and connect the tester's black lead (—) to the rectifier's white lead.
- Reverse the tester lead connections and take a reading.



E. Result

Pocket test connecting point		Good	Replace (element shorted)	Replace (element opened)
(+) (red)	(-) (black)			
A	B	○	○	×
B	A	×	○	×

○: Continuity
 ×: Discontinuity (∞)

CAUTION:

The silicon rectifier can be damaged if subject to overcharging. Special care should be taken to avoid a short circuit and/or incorrect connection of the positive and negative leads at the battery. Never connect the rectifier directly to the battery to make a continuity check.

[illegible]

STARTING CIRCUIT OPERATION

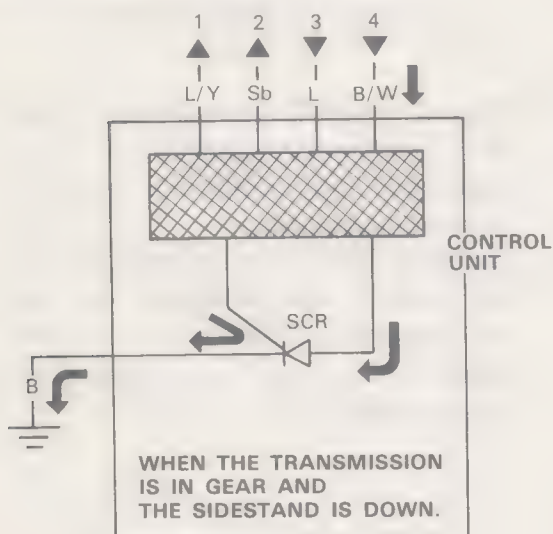
The starting circuit on this model consists of the C.D.I. unit, control unit, neutral switch, and the sidestand switch. If the engine stop switch and the main switch are both on, the engine can be started only if:

1. The transmission is in neutral (the neutral switch is on).
- or
2. The clutch lever is pulled to the handlebar and the sidestand is up (the sidestand switch is on and neutral switch is off).

The control unit prevents the engine from starting when neither of these conditions has been met. When one or both of the above conditions have been met, the engine can be started. The motorcycle can be ridden, however, only when the sidestand is up.

A. Control Unit

The control unit functions by shorting the C.D.I. ignition current so the C.D.I. cannot operate. If the sidestand is down, C.D.I. ignition current is grounded through the control unit; thus, the engine cannot run unless the transmission is in neutral. When one or both of the above conditions have been met, however, the control unit does not operate. Ignition current flows to the C.D.I., and the engine can be started.



B. Troubleshooting Starting system

ENGINE CAN BE STARTED

Keep motorcycle with sidestand (sidestand switch is off) and transmission is in neutral (neutral switch is on)

OK

Start engine and keep it idle

OK

Disconnect sky blue color lead from neutral switch

OK

If engine will be stopped, control unit is good

ENGINE CAN NOT BE STARTED

NOTE:

Check the ignition system first before performing the following check.

Keep motorcycle with sidestand (sidestand switch is off) and transmission is in neutral (neutral switch is on)

OK

Check switch(es) and neutral light for continuity

Replace switch(es) and/or neutral light

If other than specified

OK

Disconnect black/white lead from control unit. Then start engine

Poor ground or poor connect of control unit

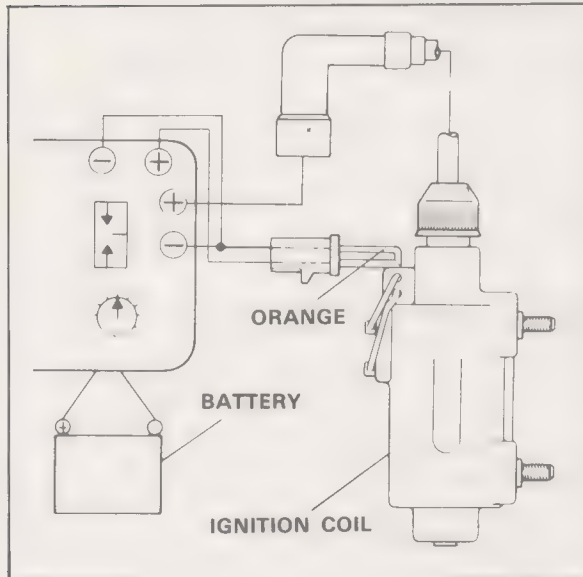
Engine can not be started

Engine can be started

Control unit is faulty, replace it.

Ignition spark gap test

1. Disconnect the ignition coil wires from the wiring harness and from the spark plug.
2. Connect the Electro Tester as shown.



3. Connect a fully charged battery to the tester.
4. Turn on the spark gap switch, and increase the gap to maximum unless misfire occurs first.

Minimum spark gap: 7 mm (0.28 in)

Direct current resistance test

Use the pocket tester to determine resistance and continuity of primary and secondary coil windings.

Standard value:

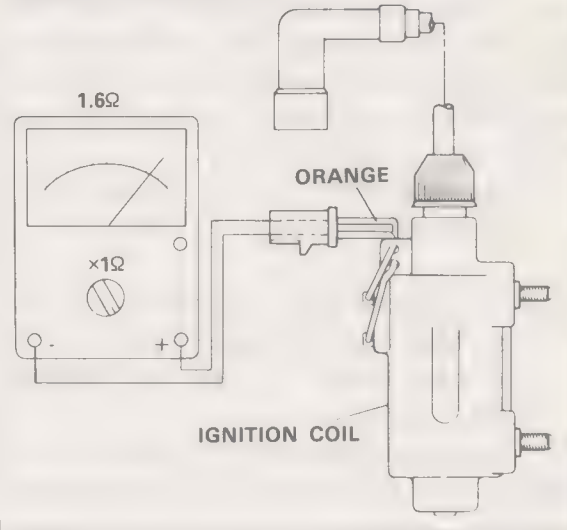
Primary coil resistance:

$1.6 \Omega \pm 10\%$ at 20°C (68°F)

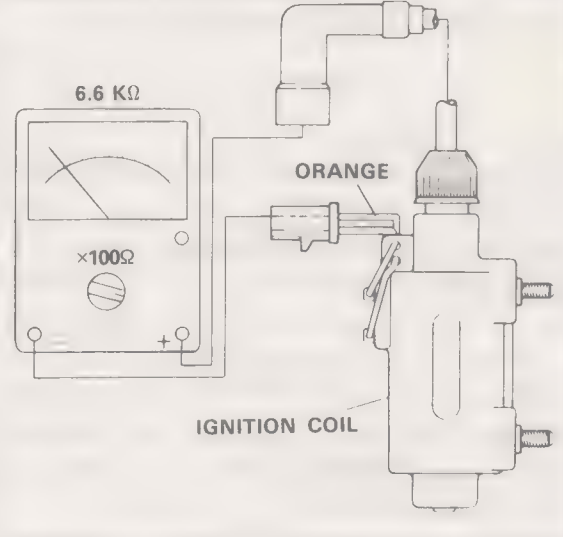
Secondary coil resistance:

$6.6 \text{ K} \Omega \pm 15\%$ at 20°C (68°F)

PRIMARY COIL CHECK

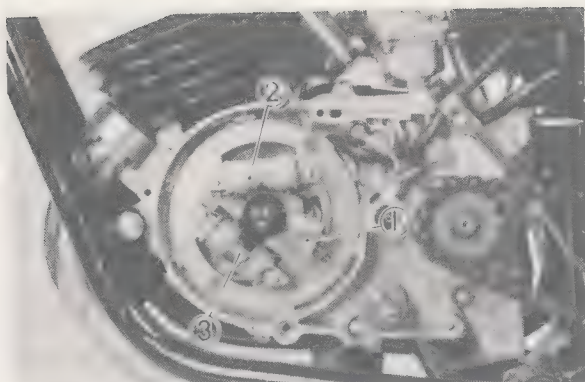


SECONDARY COIL CHECK

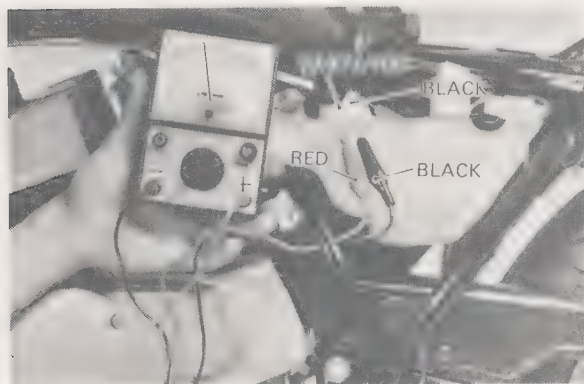


C. Pickup Coil and Charge Coil Resistance

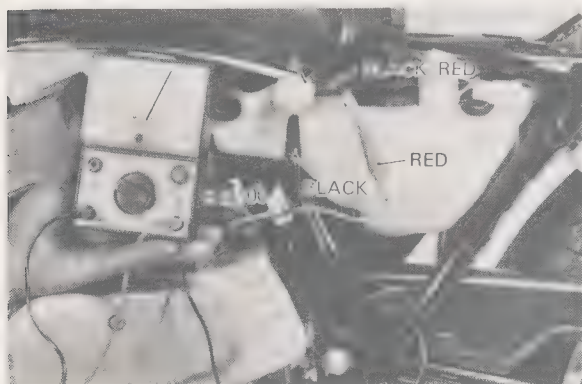
1. Remove the left-side cover.
2. Disconnect the connectors from the flywheel magneto wires.
3. Check the resistance of the pickup coil and charge coil windings with the pocket tester. If the resistance is not within specification, replace the pickup coil assembly.



1. Pickup coil
2. Charging coil
3. Lighting/Charging coil



Pickup coil resistance:
 $20 \Omega \pm 10\%$ at 20°C (68°F)
(White/Red — Black)



Charge coil resistance:
 $300 \Omega \pm 10\%$ at 20°C (68°F)
(Black/Red — Black)

D. Spark Plug

The life of a spark plug and its discoloring vary according to the habits of the rider. At each periodic inspection, replace burned or fouled plugs with new ones of the specified type. It is actually economical to install new plugs often since it will tend to keep the engine in good condition and prevent excessive fuel consumption.

1. Inspect and clean the spark plug every 4,000 km (2,500 mi), and replace after initial 13,000 km (8,000 mi).
2. Clean the electrodes of carbon, and adjust the electrode gap to the specification. Be sure to use the proper reach, type, and electrode gap plug(s) as a replacement to avoid overheating, fouling, or piston damage.

Type:

B8HS (NGK)

Electrode gap:

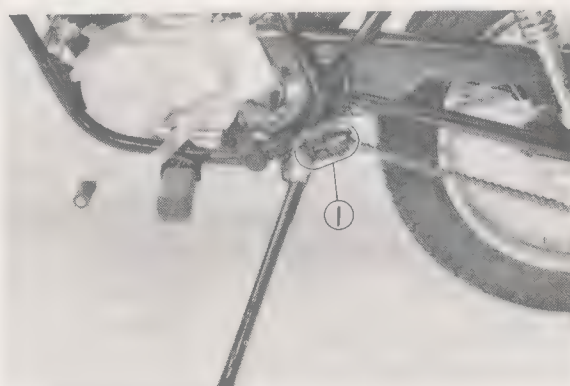
0.5 ~ 0.6 mm (0.020 ~ 0.024 in)

Tightening torque:

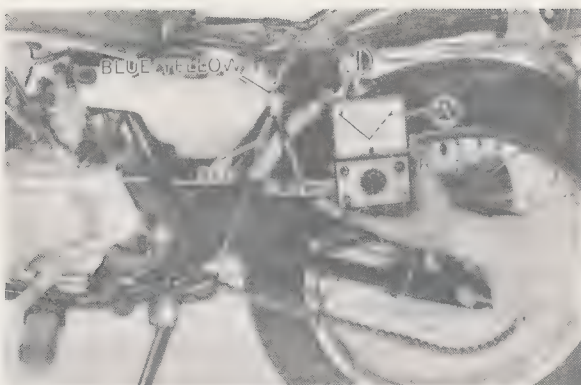
20 Nm (2.0 m·kg, 14 ft·lb)

E. Sidestand Switch

1. Remove the seat. Remove the left-side cover and disconnect the connector.
2. Connect the pocket tester leads as shown, and set the tester selector to ohm $\times 1$. When the sidestand is up, the tester should read zero ohms. When the sidestand is down, the tester should read infinity.



1. Sidestand switch

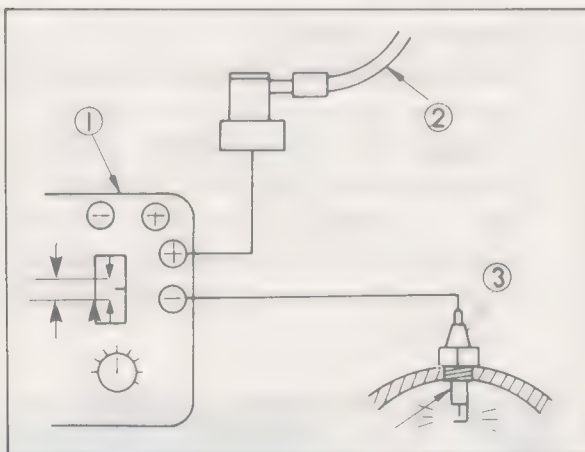


1. Sidestand is down 2. Sidestand is up

F. Troubleshooting

The entire ignition system can be checked for misfire and weak spark using the Electro Tester. If the ignition system will fire across a sufficient gap, the engine ignition system can be considered good. If not, proceed with individual component tests until the problem is found.

1. Warm up the engine thoroughly so that all electrical components are at operating temperature.
2. Stop the engine and connect the tester as shown.



1. Electro tester 2. Spark plug wire 3. Spark plug

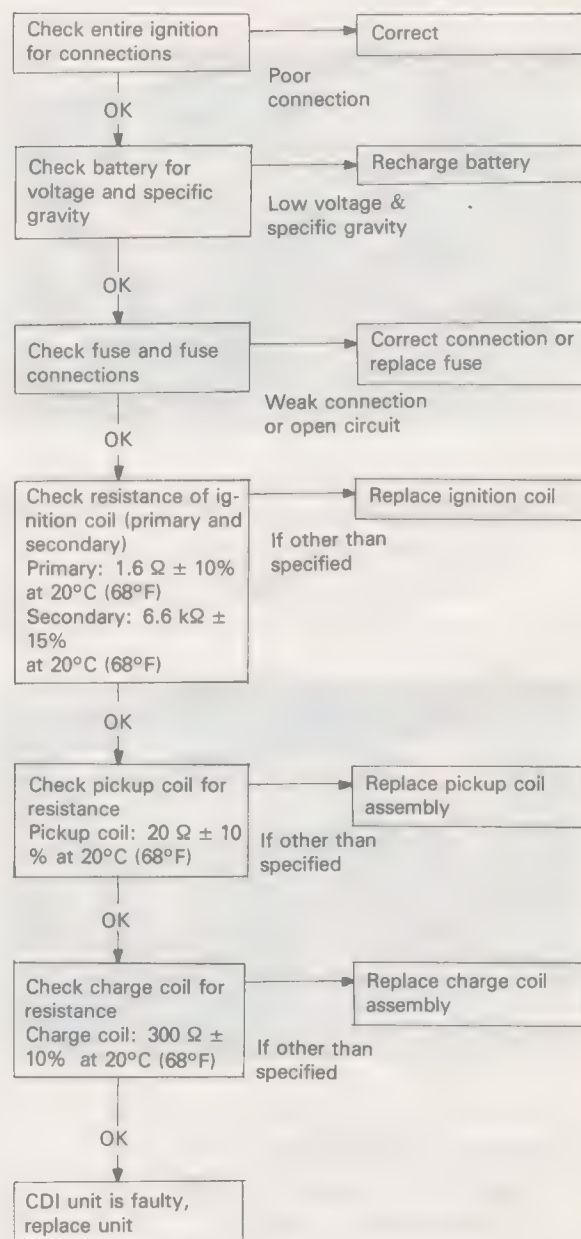
3. Start the engine and increase the spark gap until misfire occurs. (Test at various rpm's between idle and red line.)

Minimum spark gap: 7 mm (0.28 in)

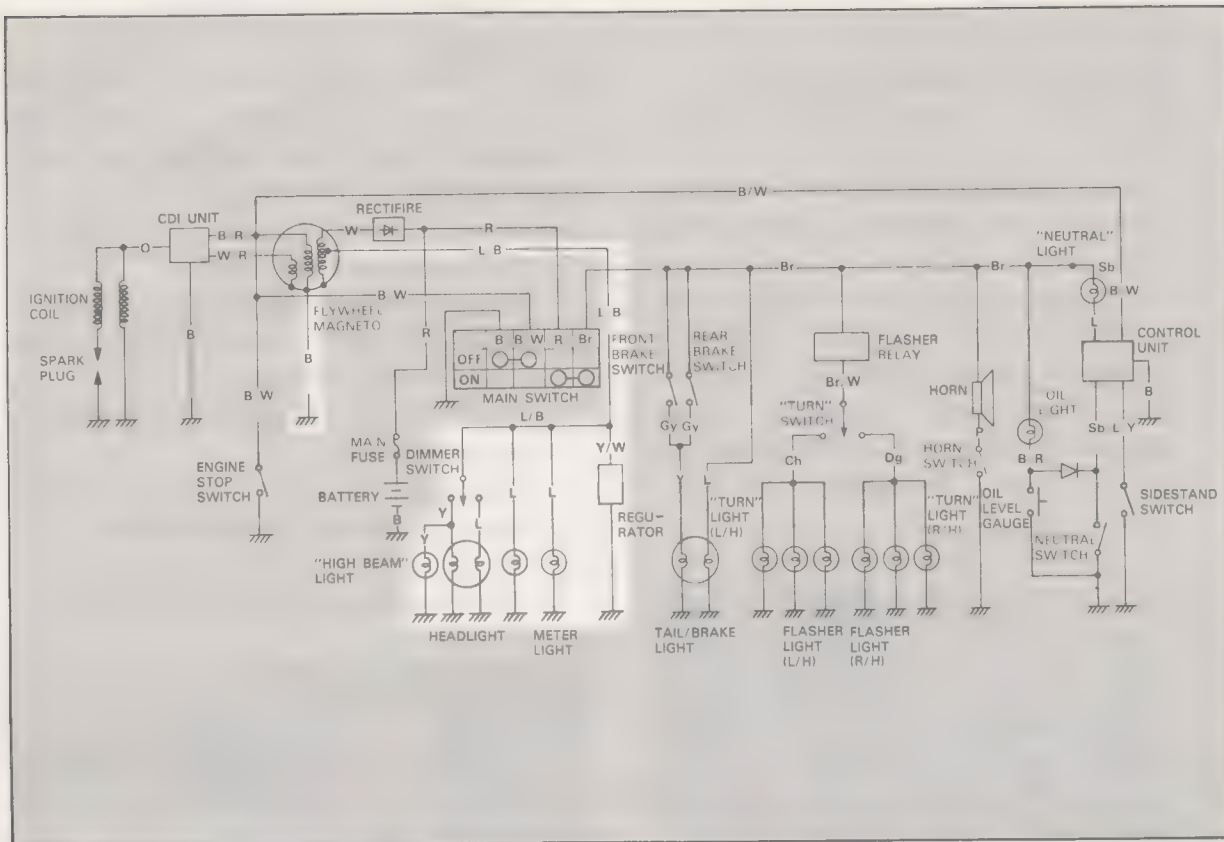
CAUTION:

Do not run the engine in neutral above 6,000 rpm for more than 1 or 2 seconds.

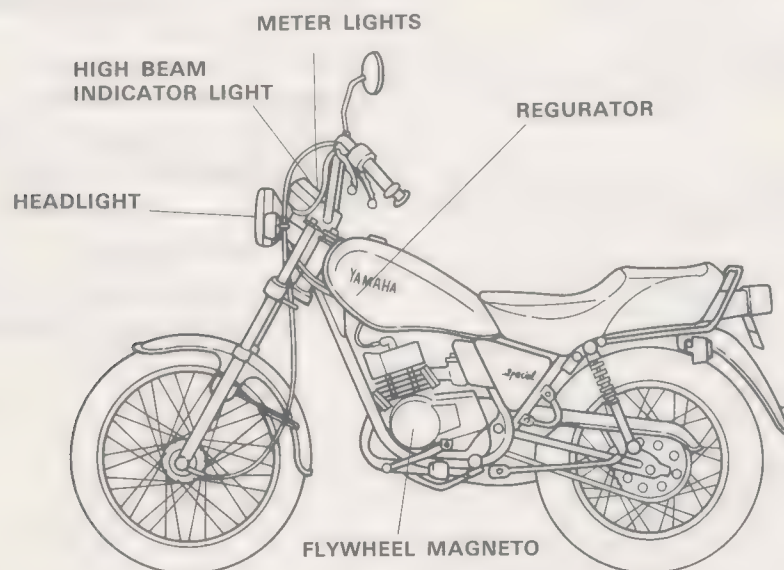
If the ignition system becomes inoperative or if the engine misfires at the minimum spark gap or at a smaller gap, there is a problem in the ignition system. Follow the troubleshooting chart until the source of the problem is located.



LIGHTING SYSTEM

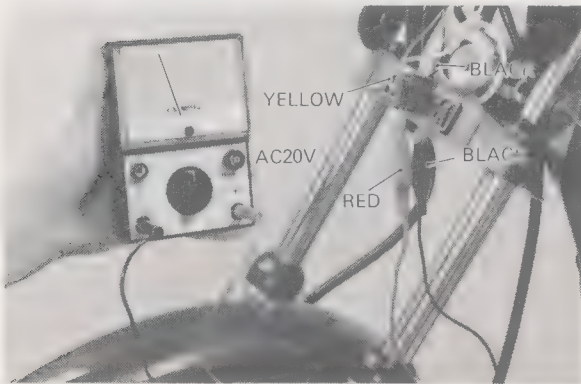


This circuit diagram shows the charging circuit in the wiring diagram.

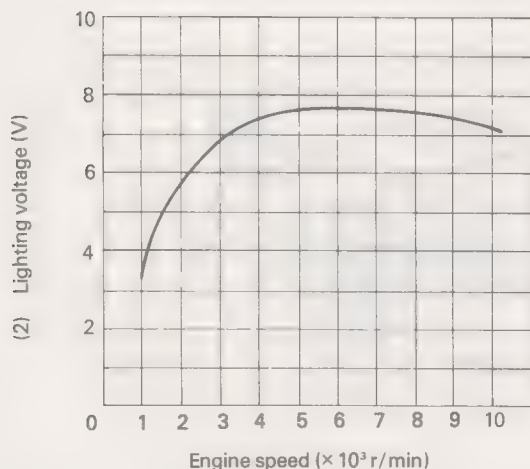


A. Lighting Voltage Tests and Checks (A.C. Circuit)

1. A.C. circuit output test
 - a. Remove the headlight unit assembly
 - b. Switch Pocket Tester to AC 20V position.
 - c. Connect positive (+) test lead to yellow connection and negative (-) test lead to black lead.
 - d. Start engine, and check voltage at each engine speed in table. If measured voltage is too high or too low, check for bad connections, damaged wires, burned-out bulbs, or bulb capacities that are too large throughout the A.C. lighting circuit.



Lighting output: $7.5 \pm 0.3V$



- e. If the measured voltage exceeds 8V, replace the voltage regulator.

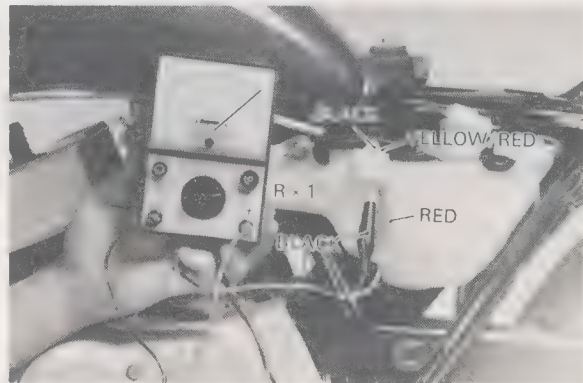
CAUTION:

If the voltage regulator is faulty, the headlight and HIGH BEAM indicator light bulbs may be damaged.

2. Lighting coil resistance check

If voltage is incorrect in A.C. lighting circuit, check the resistance of the yellow wire windings of the lighting coil.

- a. Switch Pocket Tester to $\Omega \times 1$ position and zero meter.
- b. Connect positive (+) test lead to yellow wire from magneto and negative (-) test lead to a good ground on the engine. Read the resistance on the ohms scale.



Lighting coil resistance:

$0.2\Omega \pm 20\%$ at $20^\circ C$ ($68^\circ F$)
(Yellow/Red — Black)

3. If A.C. lighting circuit components check out properly but circuit voltage is still excessive, go to the A.C. regulator check.

B. Voltage Regulator (A.C. Regulator)

1. Preparation for inspection

- Instruments required for inspection.
A.C. regulator checker and 12V battery.
- Connect the red lead wire (for power) of the regulator checker to the positive side and connect the black lead wire to the negative side of the battery terminals.

c. Checking the battery voltage

First, set the switches, both right and left, to "12V, VOLT". If the checker needle points to 10 volts or more, the battery voltage is sufficient.

2. Checking the regulator

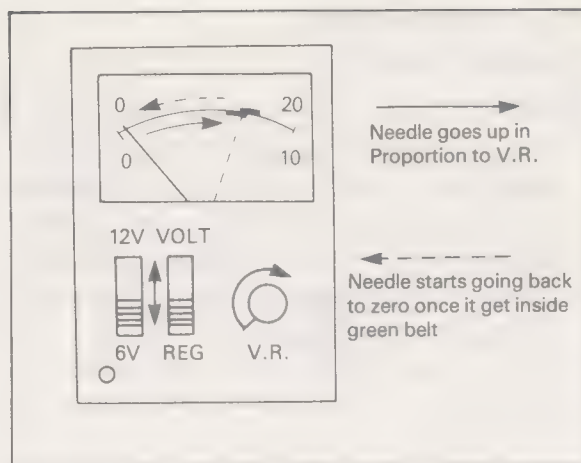
- Turn the volume (V.R.) of checker completely counterclockwise.
- Set the VOLT-REG switch for REG and the 6V-12V switch for 6V.
- Connect the pintipped lead wires to the A.C. regulator; black to the regulator body and red to the regulator lead wire (Yellow/White).
- As the volume (V.R.) is gradually turned clockwise, the meter needle goes up. This needle comes back to zero as the regulator begins to operate. The regulator functions all right if the needle starts back toward zero within the green range on the scale.

* Good regulator:

The meter needle begins to turn back within the green belt on the meter.



1. Voltage regulator



* Bad regulator

Shorted regulator



Open regulator



Regulator with higher operational voltage



Regulator with lower operational voltage

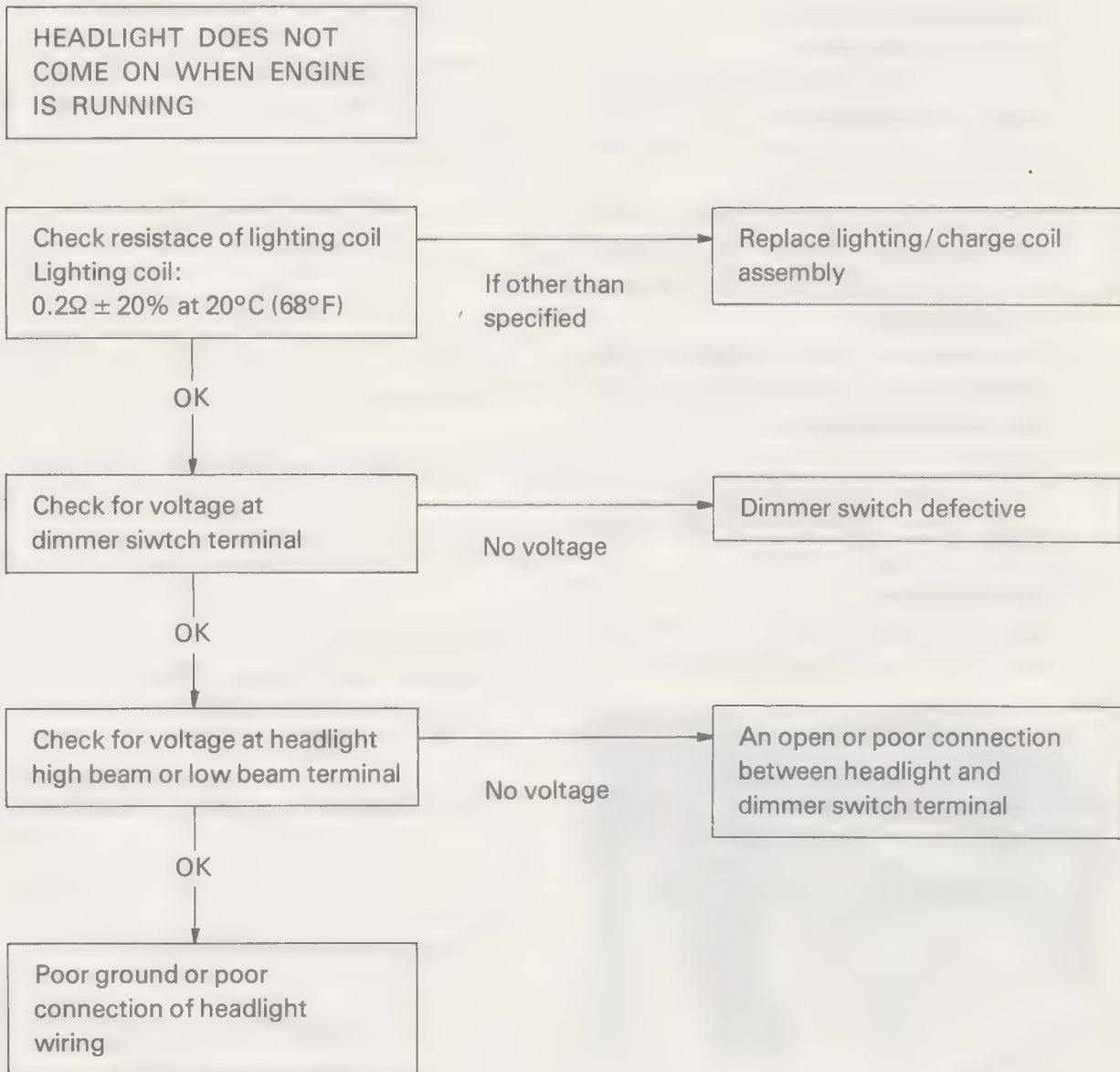


C. Troubleshooting

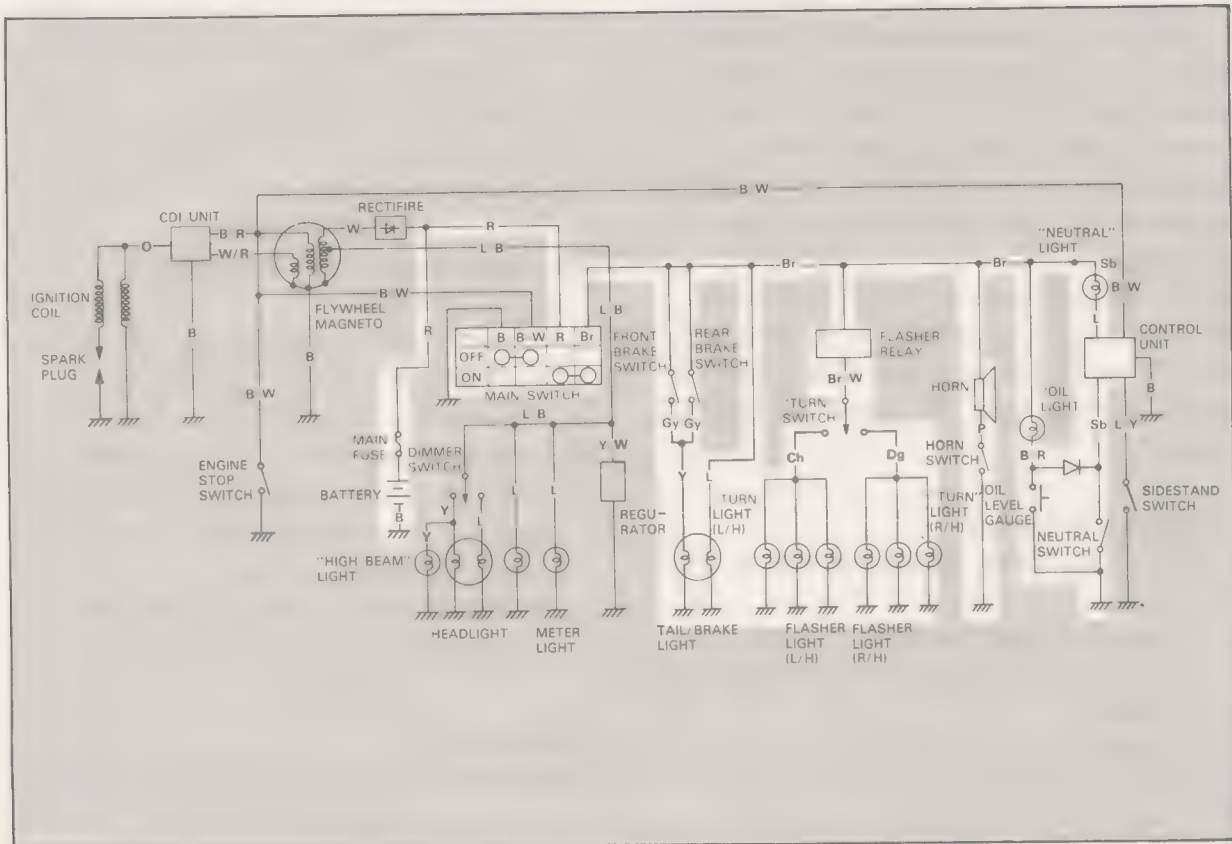
Headlight check

NOTE: _____

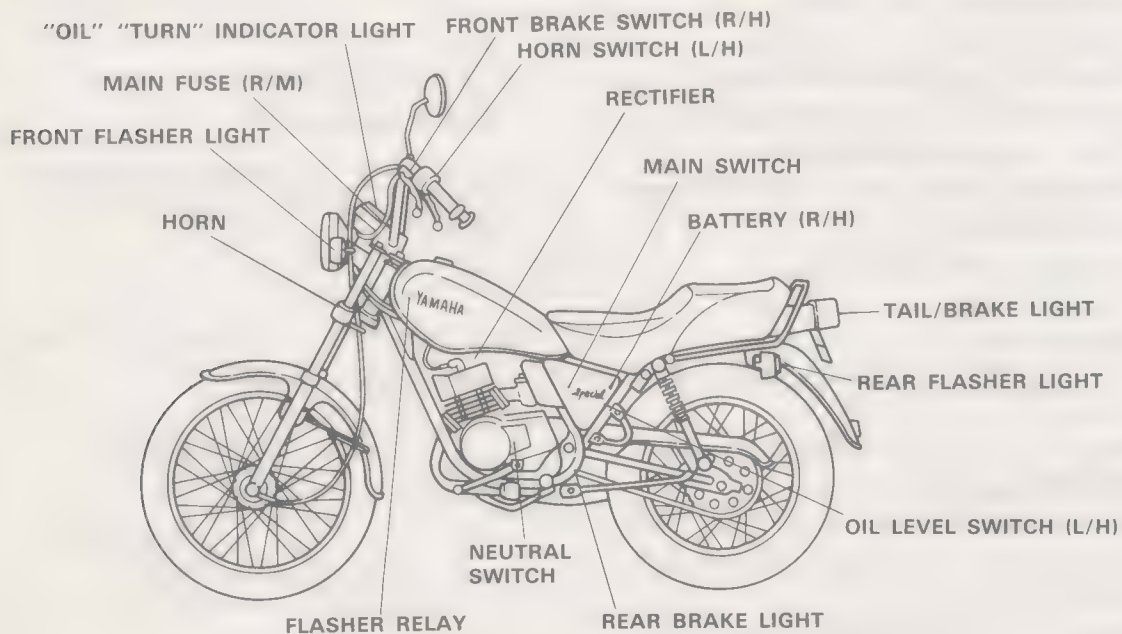
- When the engine is started, the headlight and meter lights come on automatically and the lights stay on until the main switch is turned to "OFF" even if the engine stalls.
- Check the headlight bulb first before performing the following check.



SIGNAL SYSTEM



This circuit diagram shows only the signal circuit in the wiring diagram.



A. Signal System Tests and Checks

The battery provides power for operation of the horn, tail/brake light, indicator lights, and flasher light. If none of the above operates, always check the battery voltage before proceeding further. Low battery voltage indicates either a faulty battery, low battery electrolyte, or a defective charging system. See page 6-8 "CHARGING SYSTEM" for checks of the battery and charging system. Also check the fuse condition. Replace any "open" fuses. There are individual fuses for various circuits (see the complete circuit diagram).

Horn does not work

1. Check for 6V on the brown wire to the horn.
2. Check for good grounding of the horn (pink wire) when the horn button is pressed.

Brake light does not work

1. Check the bulb.
2. Check for 6V on the yellow wire to the brake light with brake pedal depressed.
3. Check for 6V on the brown wire to each brake light switch (front brake and rear brake switches).

Flasher light(s) do not work

1. Check the bulb.
2. Check for 6V on the yellow wire to the brake light with brake pedal depressed.
3. Check for 6V on the brown wire to each brake light switch (front brake and rear brake switches).

Flasher light(s) do not work

1. Check the bulb.
2. Right circuit:
 - a. Check for 6V on the dark green wire to the light.
 - b. Check for ground on the black wire to the light assembly.
3. Left circuit:
 - a. Check for 6V on the dark brown wire to the light.
 - b. Check for ground on the black wire to the light assembly.

4. Right and left circuits do not work:

- a. Check for 6V on the brown/white wire to the flasher switch on the left handlebar.
- b. Check for 6V on the brown wire to the flasher relay.
- c. Replace the flasher relay.
- d. Replace the flasher switch.

The neutral light does not work

1. Check the bulb.
2. Check for 6V on the sky blue wire to the neutral switch.
3. Replace the neutral switch.

Oil level warning light does not work

1. Connect the oil level switch (black/red wire) to ground. If the light comes on, check for proper oil level.
2. If the oil level is correct, replace the oil level switch.

B. Switches

Switches may be checked for continuity with a pocket tester on the "ohm $\times 1$ " scale.

1. Main switch

Switch position	Wire color			
	B	B/W	R	Br
OFF	○	○		
ON			○	○

2. Engine stop switch

Switch position	Wire color	
	B/W	B
RUN		
OFF	○	○

3. Lights (dimmer) switch

Switch position	Wire color		
	Y	L/B	L
HI	○	○	
LO		○	○

4. Turn switch

Switch position	Wire color		
	Dg	Br/ W	Ch
R	○	○	
N			
L		○	○

5. Horn switch

Button position	Wire color	
	P	B
PUSH	○	○
OFF		

CHAPTER 7. APPENDICES

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SPECIFICATIONS

GENERAL SPECIFICATIONS

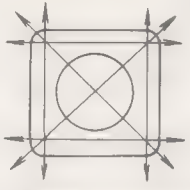
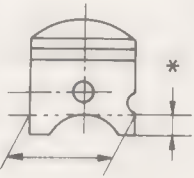
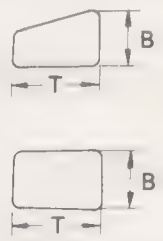
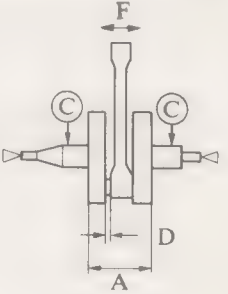
Model	RX50K
Model Code Number	23H
Federal V.I.N. Number	JYA23H00 * DA000101
Frame Starting Number	JYA23H00 * DA000101
Engine Starting Number	23H-000101
Dimensions:	
Overall Length	1,870 mm (73.6 in)
Overall Width	805 mm (31.7 in)
Overall Height	1,110 mm (43.7 in)
Seat Height	725 mm (28.5 in)
Wheelbase	1,230 mm (48.4 in)
Minimum Ground Clearance	205 mm (8.1 in)
Basic Weight:	
With Oil and Full Fuel Tank	84 kg (185 lb)
Minimum Turning Radius	2,000 mm (78.7 in)
Engine:	
Engine Type	Liquid cooled, Air cooled 2-stroke, gasoline, torque induction
Cylinder Arrangement	Single cylinder, Forward inclined
Displacement	49 cm ³
Bore × Stroke	40.0 × 39.2 mm (1.575 × 1.543 in)
Compression Ratio	7.4 : 1
Compression Pressure	686.5 kPa (7.0 kg/cm ² , 99.6 psi)
Starting System	Kick starter
Lubrication System	Separate lubrication (Yamaha Autolube)
Oil Type or Grade:	
Engine Oil	Yamalube 2-cycle oil or Air cooled 2-stroke engine oil
Transmission Oil	Yamalube 4-cycle oil or SAE 10W30 type SE motor oil
Oil Capacity:	
Oil Tank (Engine Oil)	1.1 L (1.0 Imp qt, 1.2 US qt)
Transmission Oil	
Periodic Oil Change	0.575 ~ 0.625 L (0.51 ~ 0.55 Imp qt, 0.61 ~ 0.66 US qt)
Total Amount	0.625 ~ 0.675 L (0.55 ~ 0.59 Imp qt, 0.66 ~ 0.71 US qt)
Air Filter	Wet type element
Fuel:	
Type	Regular gasoline
Tank Capacity	8.5 L (7.5 Imp gal, 2.2 US gal)
Carburetor:	
Type/Manufacturer	VM16/MIKUNI


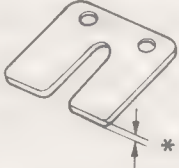
Model	RX50K
Spark Plug: Type/ Manufacturer Gap	B8HS/ NGK 0.5 ~ 0.6 mm (0.020 ~ 0.024 in)
Clutch Type	Wet, multiple disc
Transmission: Primary Reduction System Primary Reduction Ratio Secondary Reduction System Secondary Reduction Ratio Transmission Type Operation Gear Ratio 1st 2nd 3rd 4th 5th	Gear 68/ 19 (3.578) Chain 47/ 12 (3.916) Constant mesh 5-speed Left foot operation 39/ 12 (3.250) 34/ 17 (2.000) 30/ 21 (1.428) 27/ 24 (1.125) 25/ 26 (0.961)
Chassis: Frame Type Caster Angle Trail	Semi double cradle 29° 00' 108 mm (4.25 in)
Tire: Type Size (F) Size (R)	With tube 2.50-19-4PR 3.50-16-4PR
Tire Pressure (Cold tire): WEIGHT with oil and full fuel tank (F) (R) Maximum load limit* (F) (R) Cold tire pressure Normal riding (F) (R) Minimum tire tread depth (F) (R)	38 kg (84 lb) 46 kg (101 lb) 64 kg (140 lb) 109 kg (240 lb) 147 kPa (1.5 kg/cm ² , 22 psi) 147 kPa (1.5 kg/cm ² , 22 psi) 0.8 mm (0.03 in) 0.8 mm (0.03 in) *Total weight of the motorcycle with accessories, etc.
Brake: Front Brake Type Operation Rear Brake Type Operation	Single, Disc brake Right hand operation Drum brake Right foot operation
Suspension: Front Suspension Rear Suspension	Telescopic fork Swingarm
Shock Absorber: Front Shock Absorber Rear Shock Absorber	Coil spring, Oil damper Coil spring, Oil damper
Wheel Travel: Front Wheel Travel Rear Wheel Travel	130 mm (5.12 in) 85 mm (3.35 in)


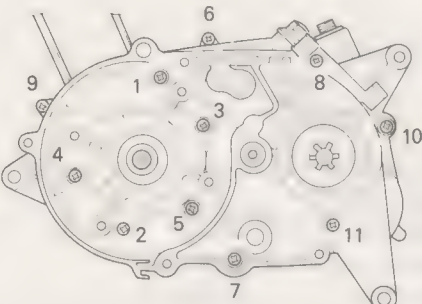
Model	RX80K
Electrical: Ignition System Generator System Battery Type or Model Battery Capacity	C.D.I. Flywheel magneto 6N4-2A 6V 4AH
Headlight Type	Sealed beam
Bulb Wattage/ Quantity: Headlight Tail/ Brake Light Flasher Light Meter light	30W/30W × 1 5.3W/ 17W × 1 17W × 4 3W × 2
Indicator Light Wattage/ Quantity: "NEUTRAL" "HIGH BEAM" "OIL" "TURN"	3W × 1 3W × 1 3W × 1 3W × 2

MAINTENANCE SPECIFICATIONS

A. ENGINE

Model	RX50K
Cylinder Head: Warp Limit 	$<0.02 \text{ mm (0.0008 in)}>$ *Lines indicate straightedge measurement.
Cylinder: Bore Size Taper Limit Out of Round Limit	40 mm (1.58 in) $<0.05 \text{ mm (0.002 in)}>$ $<0.01 \text{ mm (0.0004 in)}>$
Piston: Piston Size/ Measuring Point*  Piston Clearance Oversize 1st 2nd Piston offset	40 mm (1.58 in) / 5 mm (0.20 in) 0.035 ~ 0.040 mm (0.0014 ~ 0.0016 in) 40.25 mm (1.59 in) 40.50 mm (1.60 in) 0.20 mm (0.0079 in) / IN-side
Piston Ring: Sectional Sketch  End Gap (Installed) Side Clearance (Installed)	Top Ring 2nd Ring Keystone B = 1.2 mm (0.047 in) T = 1.6 mm (0.063 in) Plain B = 1.2 mm (0.047 in) T = 1.6 mm (0.063 in) Top Ring 2nd Ring Top Ring 2nd Ring 0.15 ~ 0.35 mm (0.006 ~ 0.014 in) 0.15 ~ 0.35 mm (0.006 ~ 0.014 in) 0.02 ~ 0.06 mm (0.008 ~ 0.024 in) 0.02 ~ 0.06 mm (0.008 ~ 0.024 in)
Crankshaft:  Crank Width "A" Run Out Limit "C" Connecting Rod Big End Side Clearance "D" Small End Free Play Limit "F"	38 mm (1.50 in) $<0.03 \text{ mm (0.0012 in)}>$ 0.4 ~ 0.5 mm (0.016 ~ 0.020 in) $<0.8 \sim 1.0 \text{ mm (0.031 \sim 0.034 in)}>$

Model	RX50K
Clutch: Friction Plate Thickness/ Quantity Wear Limit Clutch Plate Thickness/ Quantity Warp Limit Clutch Spring Free Length/ Quantity Clutch Spring Minimum Length	3.5 mm (0.14 in) × 2 <3.2 mm (0.13 in)> 2.0 mm (0.080 in) × 1 <0.05 mm (0.002 in)> 28.2 mm (1.11 in) × 4 <26.2 mm (1.03 in)>
Transmission: Main Axle Deflection Limit Drive Axle Deflection Limit	0.2 mm (0.008 in) 0.2 mm (0.008 in)
Shifter: Shifting Type Guide Bar Bending Limit	Cam drum, Guide bar <0.025 mm (0.001 in)>
Kick Starter Type Kick Clip Friction Force <Min. ~ Max.> 	Kick and mesh type P = 1.0 kg (2.2 lb) <0.8 ~ 1.2 kg (1.8 ~ 2.6 lb)>
Air Filter Oil Grade (Oiled Filter)	Foam-air-filter oil or SAE 10W30 type SE motor oil
Carburetor: Type/ Manufacturer/ Quantity I.D. Mark Main Jet (M.J.) Jet Needle-clip Position (J.N.) Needle Jet (N.J.) Cutaway (C.A.) Pilot Jet (P.J.) Pilot Air Jet (P.A.J.) Pilot Air Screw (P.A.S.) Valve Seat Size (V.S.) Starter Jet (G.S.) Float Height (F.H.) Engine Idling Speed	VM16/MIKUNI/1 4U500 #110 4I5-3 E-0 2.0 #25 #0.9 1 and 3/4 ø1.2 30 19 ± 1 mm (0.75 ± 0.04 in) 1,300 ± 50 r/ min
Reed Valve: Thickness* Valve Stopper Height Valve Bending Limit 	0.15 mm (0.006 in) 8.5 mm (0.335 in) 0.30 mm (0.012 in)

Model	RX50k
Lubrication System: Autolube Pump-Color Code -Minimum Stroke -Maximum Stroke -Minimum Output/200 Stroke -Maximum Output/200 Stroke Pulley Adjusting Mark At idle	Separate lubrication (Yamaha autolube pump) White 0.20 ~ 0.25 mm (0.008 ~ 0.010 in) 1.85 ~ 2.05 mm (0.073 ~ 0.081 in) 0.50 ~ 0.63 cm ³ (0.018 ~ 0.022 Imp oz, 0.015 ~ 0.021 US oz) 4.46 ~ 5.15 cm ³ (0.157 ~ 0.182 Imp oz, 0.15 ~ 0.17 US oz) 
Crankcase Tightening Sequence:	

Tightening Torque	Thread Size	Q'ty	Nm	m · kg	ft · lb	Remarks
Spark plug	M14	1	20	2.0	14	
Cylinder head	M6	4	10	1.0	7.2	
Drive gear	M12	1	60	6.0	43	
Clutch boss	M12	1	45	4.5	32	
Housing cover	M5		7	0.7	5.1	
Flywheel magneto	M12	1	50	5.0	36	
Change pedal	M6	1	11	1.1	8.0	
Reed valve	M6	4	10	1.0	7.2	
Drain bolt	M14	1	15	1.5	11	
Segment stopper	M6	1	10	1.0	7.2	APPLY LOCTITE
Bearing stopper plate	M6	2	10	1.0	7.2	APPLY LOCTITE

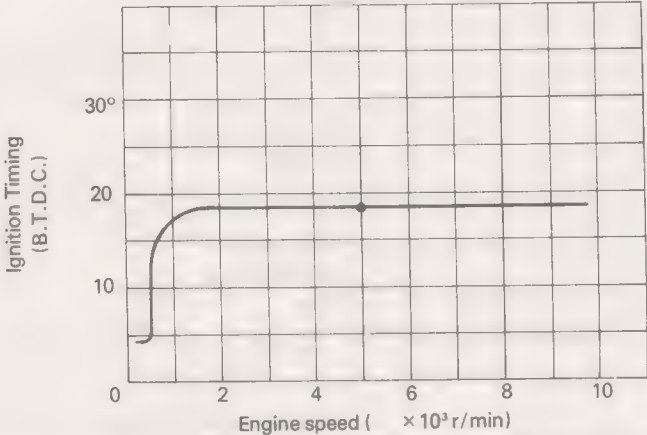
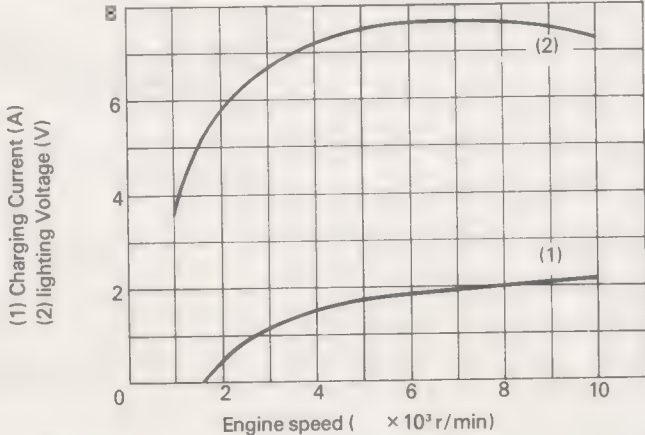
B. CHASSIS

Model	RX50k
Steering System: Steering Bearing Type No./ Size of Steel Balls Upper Lower	Ball Bearing 22 pcs/ 3/ 16 in 19 pcs/ 1/ 4 in
Front Suspension: Front Fork Travel Fork Spring Free Length <Limit> Spring Rate/ Stroke Optional Spring Oil Capacity or Oil Level Right: Left: Right: Left: Oil Grade	130 mm (5.12 in) 518.5 mm (20.41 in) <515.0 mm (20.28 in)> $K_1 = 6.47 \text{ N/mm (0.66 kg/mm, 0.12 lb/in)}$ No 87 cm ³ (3.07 Imp oz, 2.94 US oz) 117 cm ³ (4.13 Imp oz, 3.96 US oz) 210 mm (8.27 in) 104 mm (4.09 in) (From top of inner tube fully compressed without spring.) Yamaha fork oil 10wt
Rear Suspension: Shock Absorber Travel Spring Rate/ Stroke Optional Spring	85 mm (3.35 in) $K_1 = 11.77 \text{ N/mm (1.2 kg/mm, 0.21 lb/in)}$ No
Rear Arm: Swing Arm Free Play Limit	<1 mm (0.04 in)>
Wheel: Front Wheel Type Rear Wheel Type Front Rim Size/ Material Rear Rim Size/ Material Rim-Run-out Limit Vertical Lateral	Spoke Wheel Spoke Wheel 1.60 × 19/ Steel 1.85 × 16/ Steel <2.0 mm (0.08 in)> <2.0 mm (0.08 in)>
Drive Chain: Type/ Manufacturer Number of Links Chain Free Play	420M/ DAIDO 110 links 25 ~ 30 mm (1.0 ~ 1.2 in)
Disc Brake: Type Front Outside Dia. × Thickness Pad Thickness <Limit> Master Cylinder Inside Dia. Front Brake Fluid Type	Single disc 163 × 4 mm (6.42 × 0.16 in) 0.8 mm (0.03 in) <0.8 mm (0.03 in)> 14 mm (0.55 in) DOT #3

Model	RX50K
Drum Brake:	
Type Rear	Leading and trailing
Drum Inside Dia.	110 mm (4.33 in)
<Limit>	<111 mm (4.37 in)>
Lining Thickness	4.0 mm (0.16 in)
<Limit>	<2.0 mm (0.08 in)>
Shoe Spring Free Length	34.5 mm (1.36 in)
Brake Lever & Brake Pedal:	
Brake Lever Free Play/position	5 ~ 8 mm (0.20 ~ 0.32 in)/at lever end
Brake Pedal Free Play	20 ~ 30 mm (0.79 ~ 1.18 in)
	(Vertical height below footrest top)
Clutch Lever Free Play/position	2 ~ 3 mm (0.08 ~ 0.12 in)/at lever pivot

Tightening Torque	Thread Size	Q'ty	Nm	m · kg	ft · lb	Remarks
Front axle shaft	M12	1	60	6.0	43	
Under bracket & Inner tube	M10	2	20	2.0	14	
Steering stem	M10	1	40	4.0	29	
Steering crown & Handlebar lower holder	M10	2	30	3.0	22	
Handlebar upper holder	M6	4	13	1.3	9.4	
Engine mount	M8	3	23	2.3	17	
Pivot shaft	M10	1	35	3.5	25	
Rear axle shaft	M12	1	60	6.0	43	
Tension bar	M8	2	19	1.9	13	
Front fork cap bolt	M20	2	30	3.0	22	
Brake hose	M10	2	26	2.6	19	
Shock absorber upper	M8	2	16	1.6	11	
lower	M12	2	39	3.9	28	
Caliper & Front fork	M10	2	35	3.5	25	
Disc plate	M8	6	20	2.0	14	USE LOCK WASHER

C. ELECTRICAL

Model	RX50K
Voltage	6V
Ignition System Ignition Timing (B.T.D.C.) Advancer Type	$18^{\circ} \pm 1.5^{\circ}$ at 5,000 r/min Electrical
 <p>Ignition Timing (B.T.D.C.)</p> <p>Engine speed ($\times 10^3$ r/min)</p>	
C.D.I.: Magneto-Model/ Manufacturer Pickup Coil Resistance (Color) Charging Coil Resistance (Color) C.D.I. Unit-Model/ Manufacturer	F4U5/YAMAHA $20\Omega \pm 10\%$ at 20°C (68°F) (W/R—B) $300\Omega \pm 10\%$ at 20°C (68°F) (B/R—B) 3M5-M0/YAMAHA
Ignition Coil: Model/ Manufacturer Minimum Spark Gap Primary Winding Resistance Secondary Winding Resistance	C2T4/YAMAHA 7 mm (0.28 in) at r/min $1.6\Omega \pm 10\%$ at 20°C (68°F) $6.6\text{k}\Omega \pm 10\%$ at 20°C (68°F)
Charging System/Type	Flywheel magneto
F.W. Magneto: Charging Current Charging Coil Resistance (Color) Lighting Voltage Lighting Coil Resistance (Color)	0.9A or more at 4,000 r/min 2.0A or less at 8,000 r/min $0.3\Omega \pm 20\%$ at 20°C (68°F) (W—B) 6.5V or more at 3,000 r/min 7.8V or less at 8,000 r/min $0.2\Omega \pm 20\%$ at 20°C (68°F) (Y/R—B)
 <p>(1) Charging Current (A) (2) Lighting Voltage (V)</p> <p>Engine speed ($\times 10^3$ r/min)</p>	

Model	RX50K
Voltage Regulator: Type Model/ Manufacturer No Load Regulated Voltage	A.C. Regulator SU208Y/ STANLEY 7.5V \pm 0.3V
Rectifier: Model/ Manufacturer Capacity Withstand Voltage	DE4504/ STANLEY 4A 400V
Battery: Capacity Specific Gravity	6V 4AH 1.260
Horn: Type/ Quantity Model/ Manufacturer Maximum Amperage	Plain type \times 1 MF-6/ NIKKO 1.5A
Flasher Relay: Type Model/ Manufacturer Self Cancelling Device Flasher Frequency Wattage	Condenser type FU637SD/ NIPPONDENSO No 85 cycle/min 17W \times 2 + 3W
Circuit Breaker: Type Amperage for Individual Circuit/ Quantity Main Reserve	Fuse 10A \times 1 10A \times 1

CONSUMER INFORMATION

STOPPING DISTANCE

These figures indicate braking performance that can be met or exceeded by the vehicles to which they apply, without locking the wheels, under different conditions of loading and with partial failures of the braking system. The information presented represents results obtainable by skilled drivers under controlled road and vehicle conditions and the information may not be correct under other conditions.

Description of vehicles to which this table applies.: Yamaha motorcycle RX50K

A. Fully Operational Service Brake

Load

Light

93

Maximum

NOTE:

The statement above is required by U.S. Federal law. "Partial failures" of the braking system do not apply to this chart.

0 100 200 300 (Feet)
Stopping distance in feet from 45 mi/h

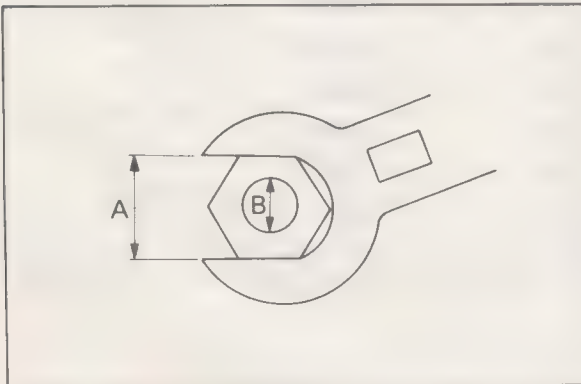
COLOR CODES

Dg: Dark green	Ch: Chocolate	B: Black	Y: Yellow	L/Y: Blue/Yellow	Y/W: Yellow/White
Sb: Sky blue	R: Red	Br: Brown	O: Orange	Br/W: Blue/White	B/Y: Black/Yellow
G: Green	W: White	L: Blue	P: Pink	B/W: Black/White	G/Y: Green/Yellow

GENERAL TORQUE SPECIFICATIONS

This chart specifies torque for standard fasteners with standard I.S.O. pitch threads. Torque specifications for special components or assemblies are included in the applicable sections of this book. To avoid warpage, tighten multi-fastener assemblies in a crisscross fashion, in progressive stages, until full torque is reached. Unless otherwise specified, torque specifications call for clean, dry threads. Components should be at room temperature.

A (Nut)	B (Bolt)	General torque specifications		
		Nm	m · kg	ft · lb
10 mm	6 mm	6	0.6	4.3
12 mm	8 mm	15	1.5	11
14 mm	10 mm	30	3.0	22
17 mm	12 mm	55	5.5	40
19 mm	14 mm	85	8.5	61
22 mm	16 mm	130	13.0	94



DEFINITION OF UNIT

Unit	Read	Definition	Measure
mm	Millimeter	10^{-3} meter	Length
cm	Centimeter	10^{-2} meter	Length
kg	Kilogram	10^3 gram	Weight
N	Newton	$1 \text{ kg} \times \text{m}/\text{sec}^2$	Force
Nm	Newton meter	$\text{N} \times \text{m}$	Torque
$\text{m} \cdot \text{kg}$	Meter kilogram	$\text{m} \times \text{kg}$	Torque
Pa	Pascal	N/m^2	Pressure
N/mm	Newton per millimeter	N/mm	Spring rate
L	Liter	—	Volume or capacity
cm^3	Cubic centimeter	—	Volume or capacity
r/min	Rotation per minute	—	Engine speed

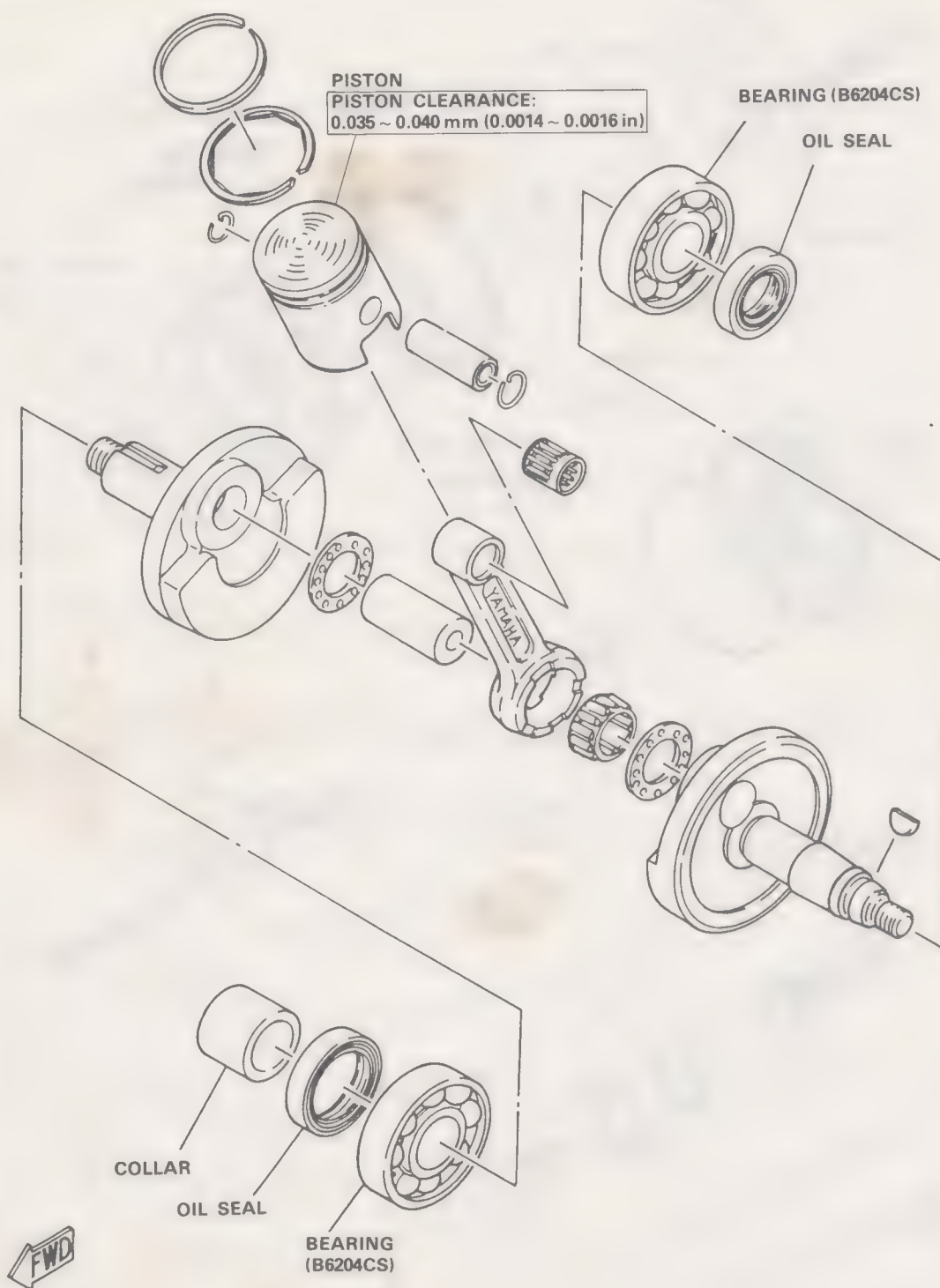
CONVERSION TABLES

METRIC TO INCH SYSTEM		
Known	Multiplier	Result
$\text{m} \cdot \text{kg}$	9.807	Nm
	7.233	ft · lb
kg	9.807	N
	2.205	lb
mm	0.03937	in
cm^3	0.03527	Imp oz
	0.03381	US oz
L (liter)	0.2200	Imp gal
	0.2642	US gal
L (liter)	0.8802	Imp qt
	1.057	US qt
kg/mm	9.807	N/mm
	56.00	lb/in
kg/cm^2	98.07	kPa
	14.22	psi
mmHg	133.3	pa
	0.03937	inHg
Centigrade (°C)	$9/5 (°\text{C}) + 32$	Fahrenheit (°F)

INCH TO METRIC SYSTEM		
Known	Multiplier	Result
Nm	0.10197	$\text{m} \cdot \text{kg}$
ft · lb	0.13826	
N	0.10197	kg
lb	0.4535	
in	25.4	mm
Imp oz	28.35	cm^3
US oz	29.57	
Imp gal	4.545	L (liter)
US gal	3.785	
Imp qt	1.136	L (liter)
US qt	3.785	
N/mm	0.10197	kg/mm
lb/in	0.0178	
kPa	0.0102	kg/cm^2
psi	0.0703	
pa	0.0075	mmHg
inHg	25.4	
Fahrenheit (°F)	$5/9 (°\text{F}) - 32$	Centigrade (°C)

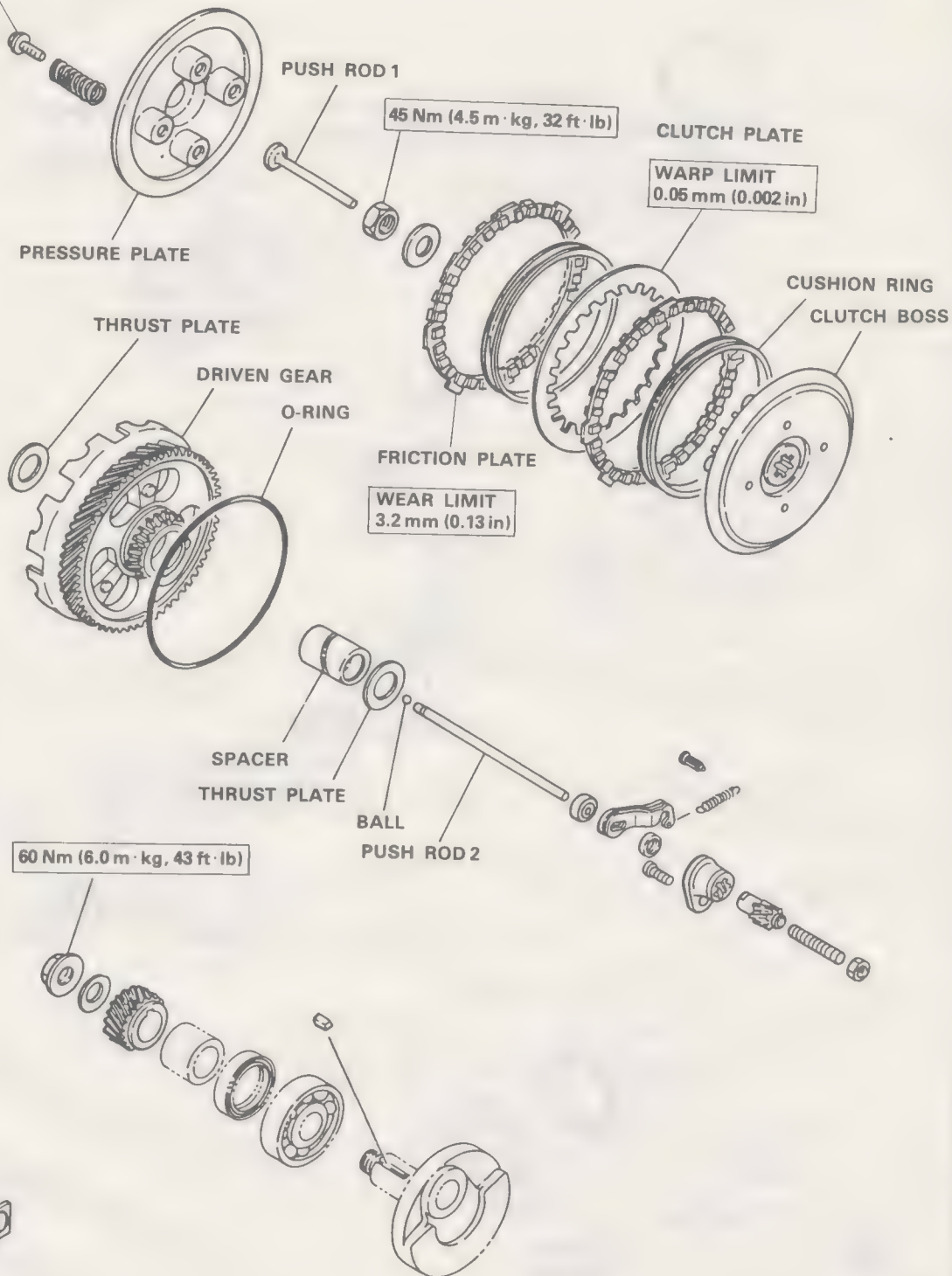
EXPLODED DIAGRAMS

CRANKSHAFT/PISTON

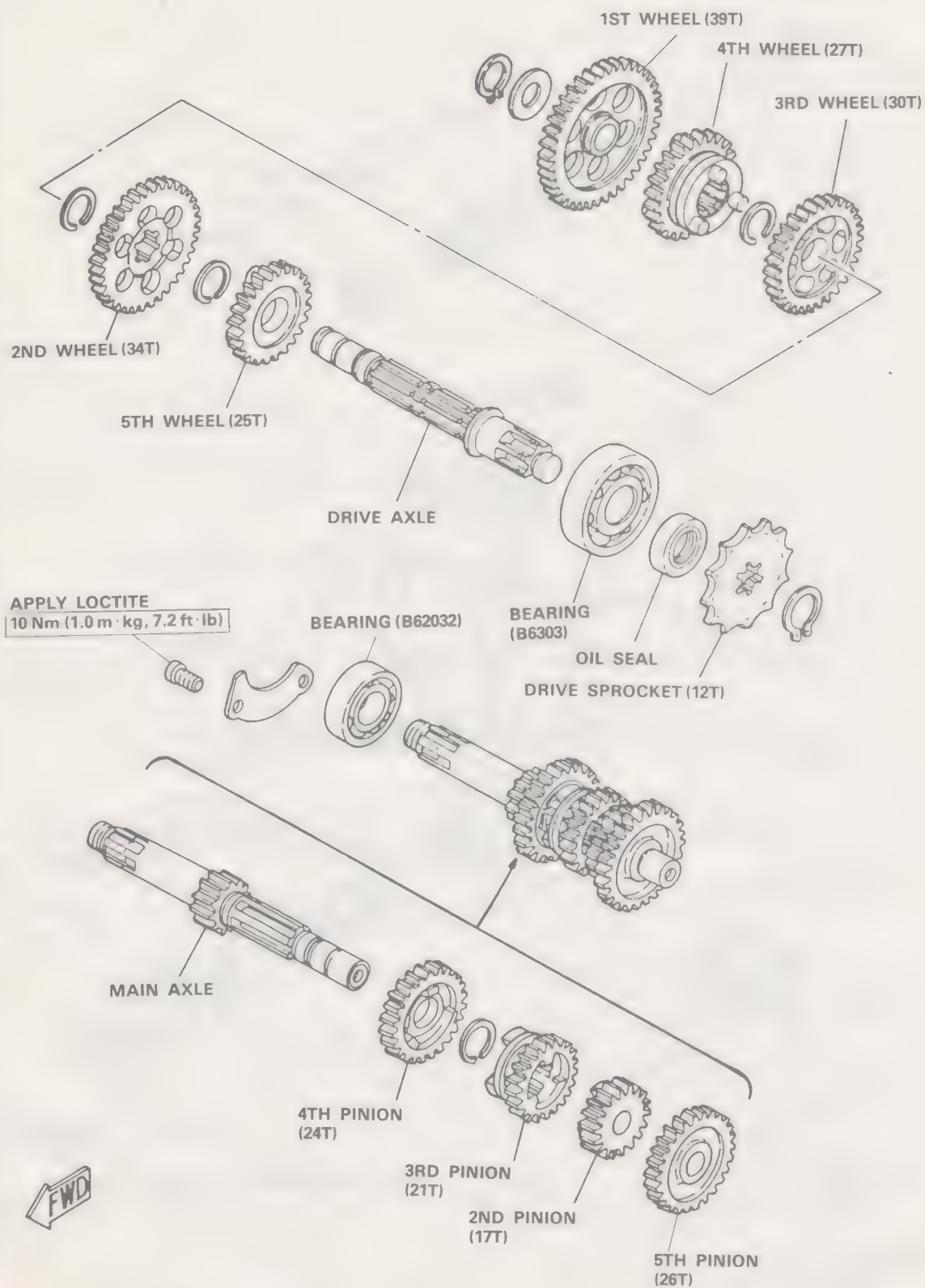


CLUTCH

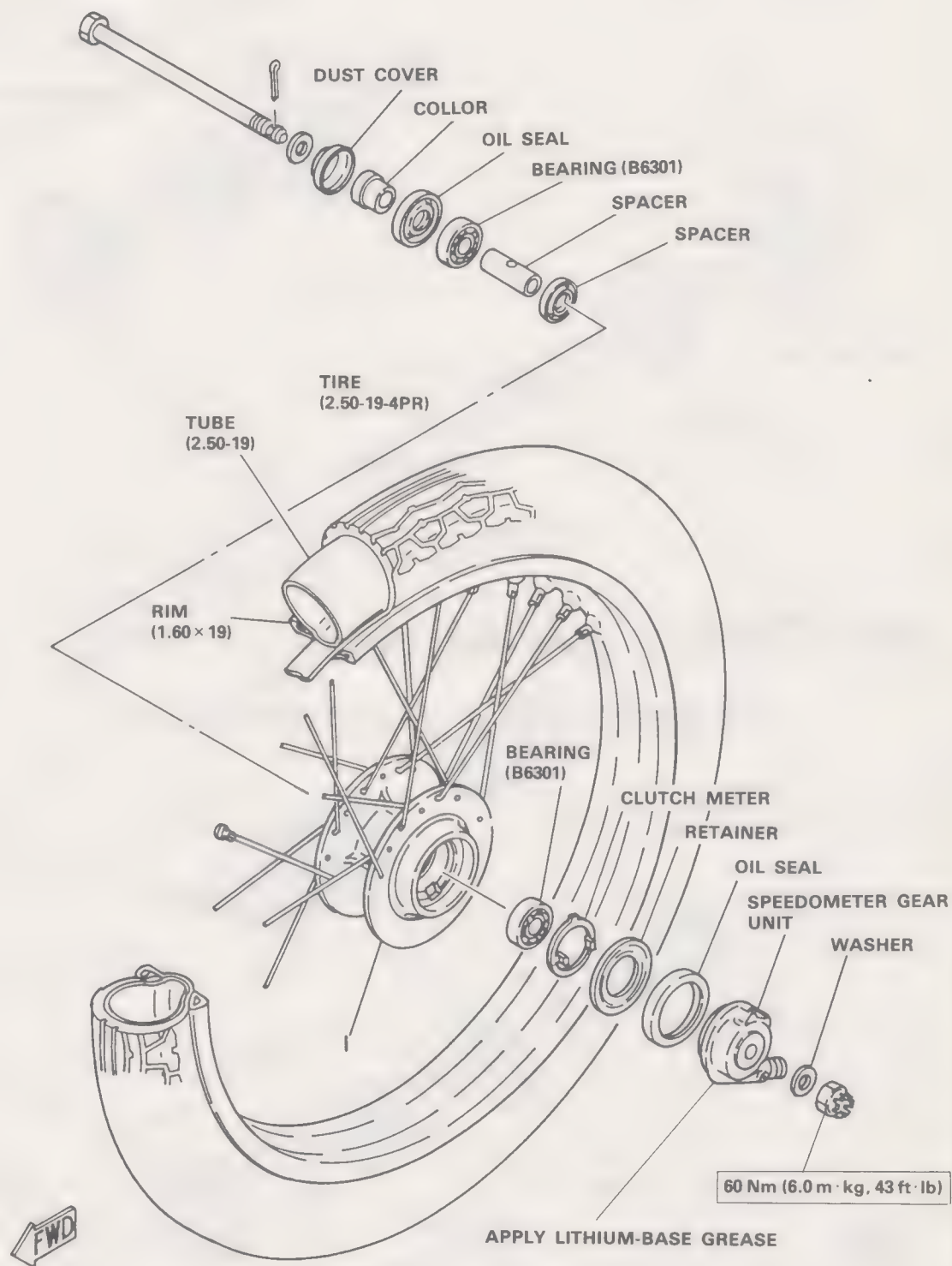
6 Nm (0.6 m · kg, 4.3 ft · lb)



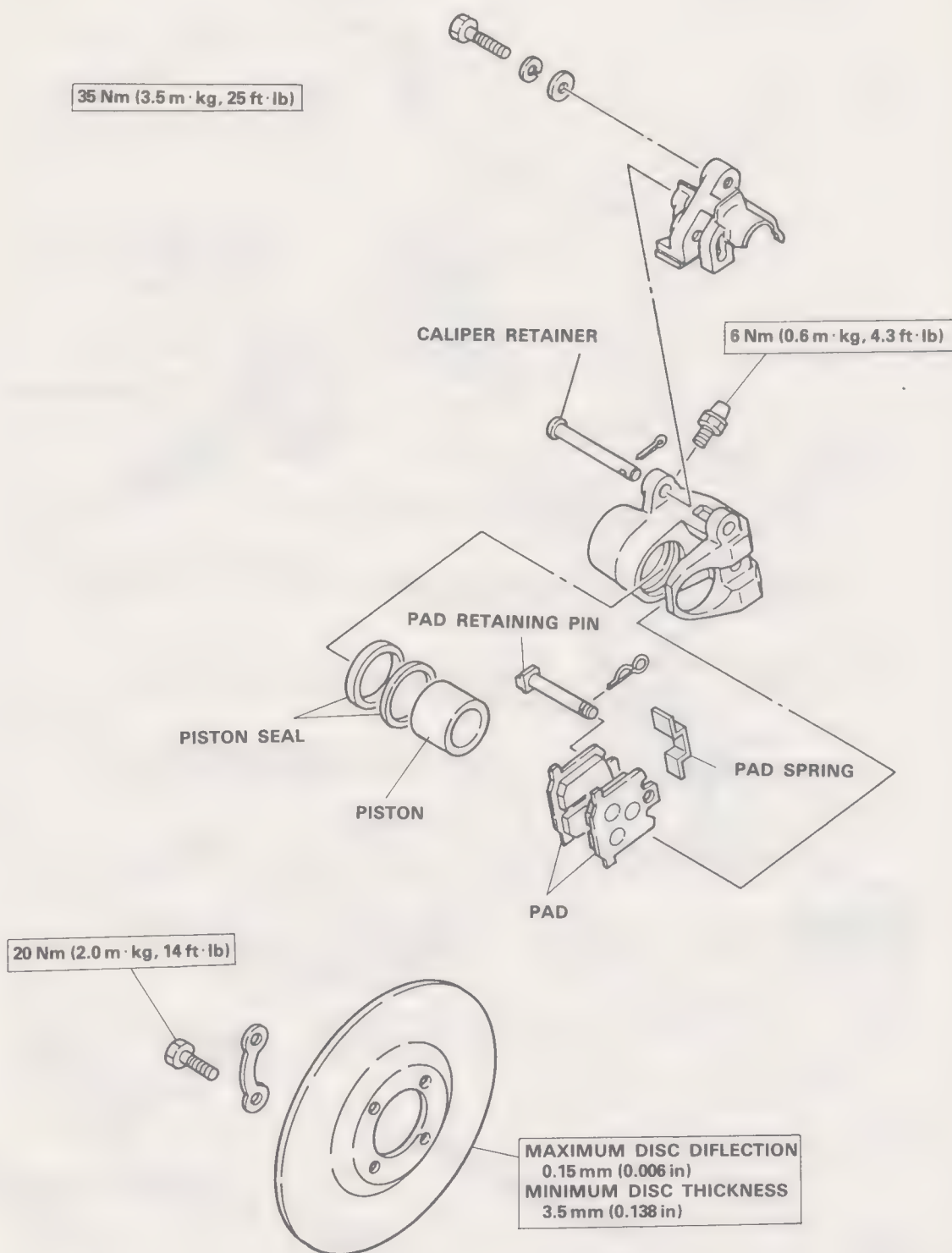
TRANSMISSION



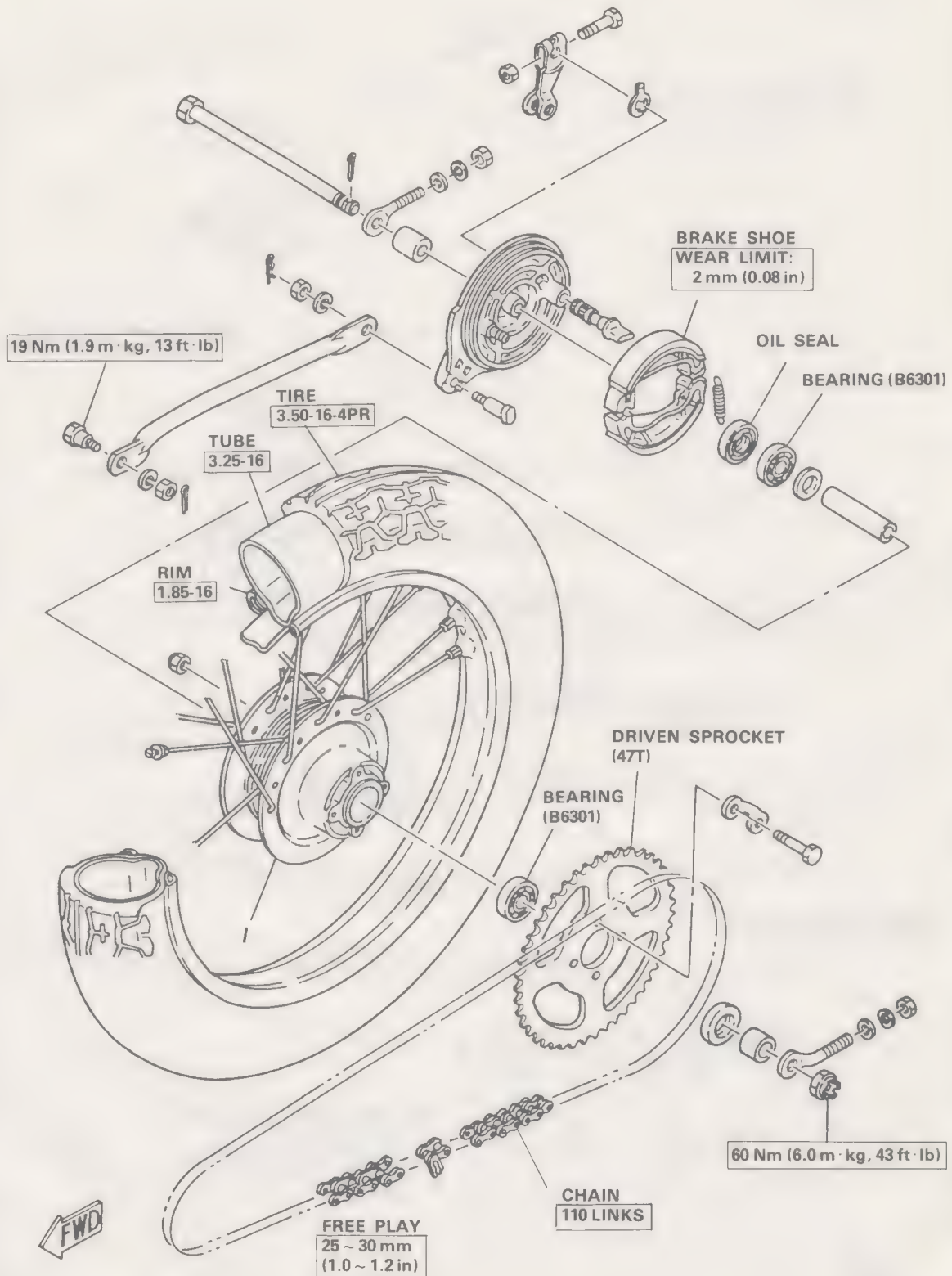
FRONT WHEEL



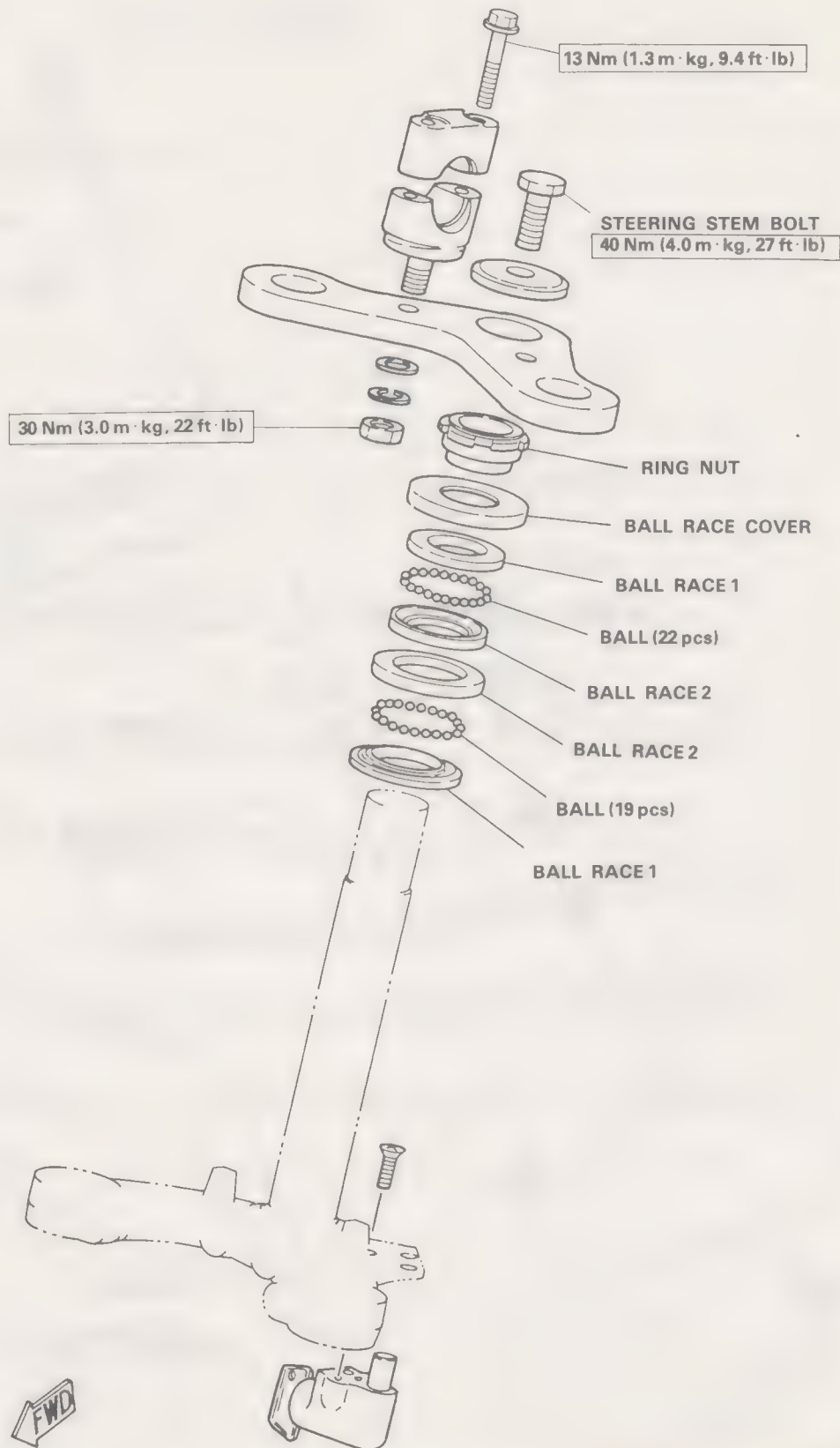
FRONT BRAKE



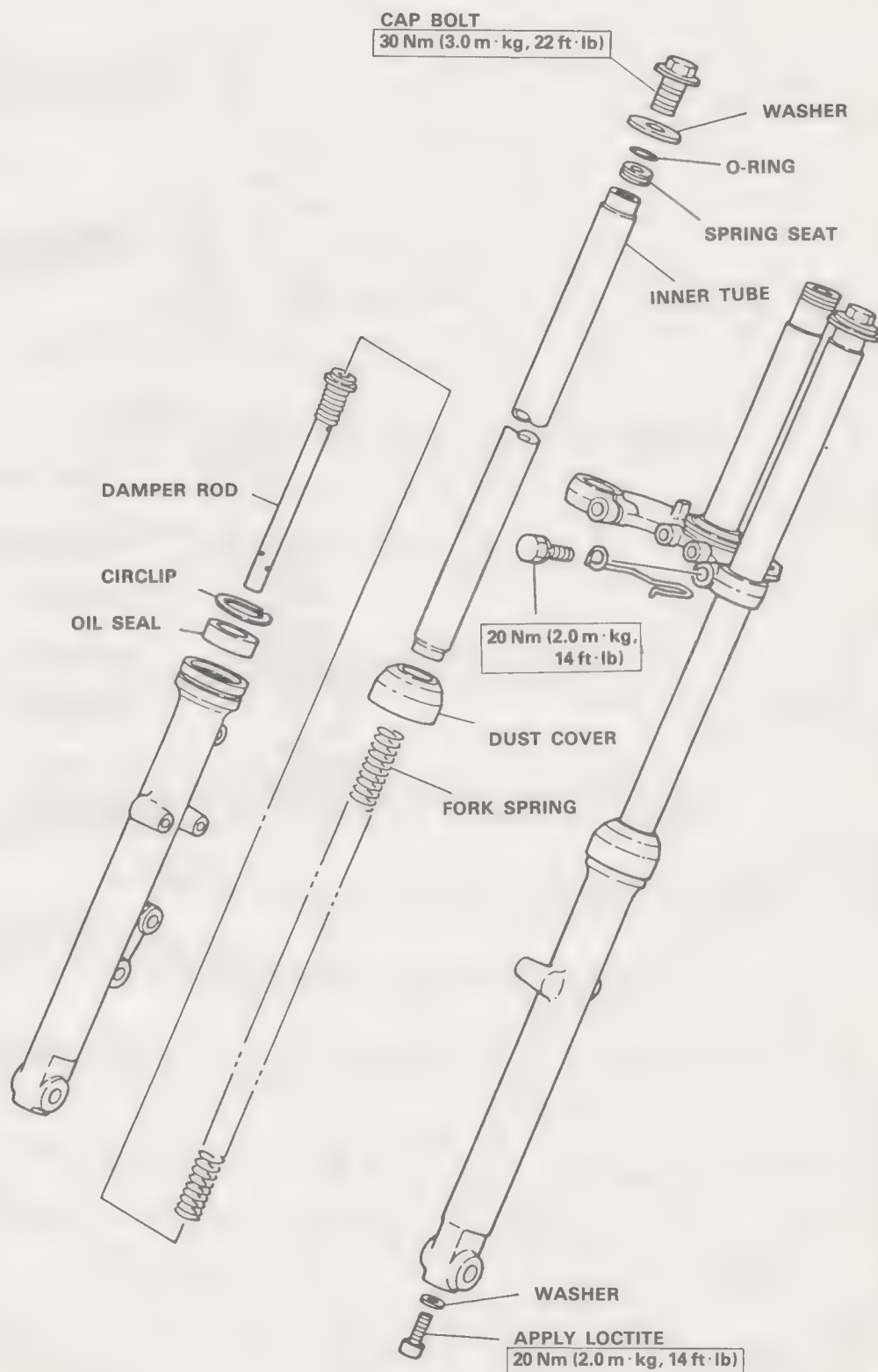
REAR WHEEL/REAR BRAKE



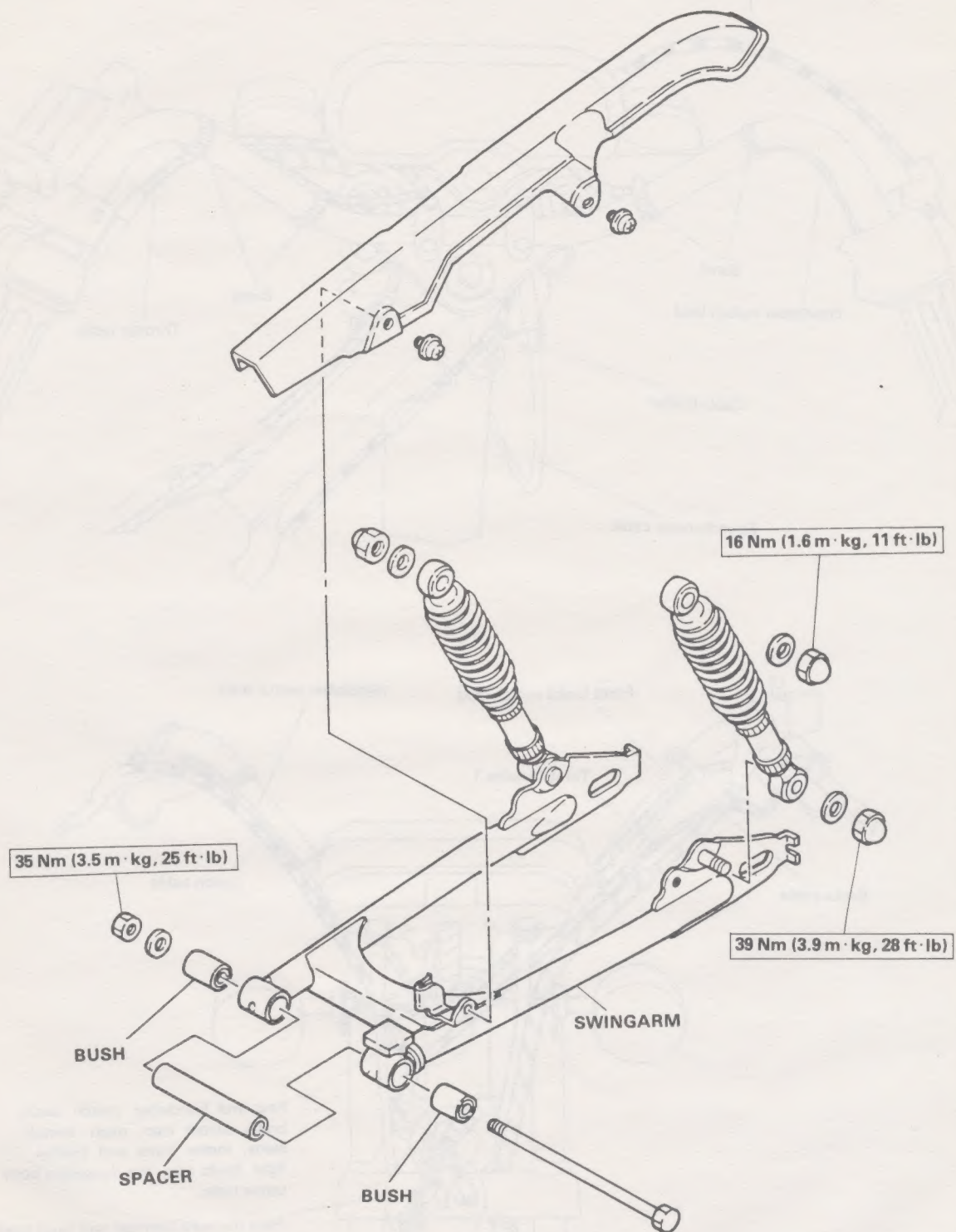
STEERING



FRONT FORK



SWINGARM



CABLE ROUTING

